3921 63985

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Date 4/8 Serial # 09/846,127 Priority Application Date _____

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In what format would you like your results? Paper is the default. (PAPER) DISK EMAIL

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Where have you searched so far on this case?
Circle: (USPT) DWPI EPO Abs JPO Abs IBM TDB
Other: _____

What relevant art have you found so far? Please attach pertinent citations or Information Disclosure Statements. _____

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Secondary Refs ___ Foreign Patents ___
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What is the topic, such as the **novelty**, motivation, utility, or other specific facets defining the desired **focus** of this search? Please include the concepts, synonyms, keywords, acronyms, registry numbers, definitions, structures, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract and pertinent claims.

Claims 1-17-21-40
Problem see Page 1 Lines 14-31
Solution " " 2 " 1-9

aff Use Only
archer: Derrick Reid/Block
archer Phone: _____
archer Location: STIC-EIC2800, CP4-9C18
te Searcher Picked Up: 4/8/02
te Completed: 60 4/9/02
archer Prep/Rev Time: 60
line Time: 170

Type of Search
Structure (#)_____
Bibliographic ✓
Litigation ✓
Fulltext_____
Patent Family_____
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Vendors
STN ✓
Dialog ✓
Questel/Orbit_____
Lexis-Nexis_____
WWW/Internet_____
Other _____

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     FILE 'REGISTRY' ENTERED AT 11:49:52 ON 09 APR 2002
L1           139 S (TA AND O)/ELS AND 2/ELC.SUB

     FILE 'HCAPLUS' ENTERED AT 11:50:47 ON 09 APR 2002
L2         11477 S L1
L3            36 S L2 AND (EMITTER OR ECL OR (COLLECTOR(2N)ELECTRODE))
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L3 ANSWER 1 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:486 HCAPLUS
DN 136:206800
TI Anodic-oxidation growth of microscopic pillar arrays: kinetic aspects
AU Vorob'eva, A. I.
CS Belarussian State University of Information Science and Electronics, Belarus
SO Russian Microelectronics (Translation of Mikroelektronika) (2001), 30(6), 381-393
CODEN: RUICE5; ISSN: 1063-7397
PB MAIK Nauka/Interperiodica Publishing
DT Journal
LA English
AB The three-step fabrication of microscopic pillar arrays by the anodic oxidn. of Al/Ta thin-film structures on dielec. or silicon substrates was studied exptl. The major features of pillar-growth kinetics are described. The main properties of the arrays are evaluated by SEM and simultaneous current-voltage tracing. The ranges of variation for geometric array parameters are detd. The pillars grown have a max. height-to-diam. ratio of 17.0, a max. height of 540 nm, and a min. radius of .apprx.15 nm. The max. d. of pillars in an array is 8.25 .times. 1010 cm-2. A good reproducibility of phys. and morphol. properties is achieved for large-area pillar arrays. Potential applications of pillar arrays are recited: light-emitting diodes, thin-film controllers, solar batteries, spatial light modulators, polarizers, etc. A study into the fabrication of pillar arrays for field-**emitter** displays is currently in progress.
IT Breakdown voltage
(in anodization of Al/Ta thin film structures in growth of microscopic pillar arrays)

IT 7429-90-5, Aluminum, uses 7440-25-7, Tantalum, uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(anodization of Al/Ta thin film structures in growth of microscopic pillar arrays: kinetic aspects)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(anodization of Al/Ta thin film structures on silicon in growth of microscopic pillar arrays)
IT 144-62-7, Oxalic acid, uses 7664-38-2, Phosphoric acid, uses
7664-93-9, Sulfuric acid, uses

L3 ANSWER 2 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:907177 HCAPLUS
DN 136:12566
TI Fiber-optic Raman lasers - design versions
IN Dianov, E. M.; Bufetov, I. A.; Grekov, M. V.; Karpov, V. I.; Prokhorov, A. M.
PA Nauchnyi Tsentr Volokonnoi Optiki pri Institute Obshchei Fiziki RAN, Russia
SO Russ., No pp. given
CODEN: RUXXE7
DT Patent
LA Russian
FAN.CNT 1
PATENT NO. KIND DATE APPLICATION NO. DATE

PI	RU 2152676	C1	20000710	RU 1998-117721	19980922

AB Raman fiber lasers are described which comprise a length of a phosphate fiber contg. .gtoreq.1 addnl. element as an active medium; a pumping source; and optical elements allowing multiple passing through the fiber waveguide portion of Stokes components bonded with phosphor oxide; and which contains a long-period grating ensuring addnl. optical loss in the Stokes component bonded with the .gtoreq.1 addnl. element. Near-IR Raman fiber lasers in which the pumping lasers have yttrium ions, neodymium ions or chromium (4+) ions as **emitters** were discussed.

(variations in design of phosphate fiber Raman laser)

IT 15118-03-3, Forsterite 50814-00-1, Calcium germanium oxide
RL: DEV (Device component use); USES (Uses)
(chromium-doped; variations in design of phosphate fiber Raman laser contg.)

IT 1303-86-2, Boron oxide, occurrence 1304-28-5, Barium oxide, occurrence 1304-76-3, Bismuth oxide, occurrence 1314-23-4, Zirconium oxide, occurrence 1332-29-2, Tin oxide 1332-37-2, Iron oxide, occurrence 1344-28-1, Aluminum oxide, occurrence 7631-86-9, Silicon oxide, occurrence 7783-41-7, Fluorine oxide 11104-93-1, Nitrogen oxide, occurrence 12024-21-4, Gallium oxide 13463-67-7, Titanium oxide, occurrence **59763-75-6**, Tantalum oxide
RL: DEV (Device component use); OCU (Occurrence, unclassified); OCCU (Occurrence); USES (Uses)
(phosphate fiber contg.; variations in design of phosphate fiber Raman laser contg.)

IT 7440-00-8, Neodymium, uses 7440-47-3, Chromium, uses 7440-64-4, Ytterbium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

L3 ANSWER 3 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:823090 HCAPLUS
DN 133:368551
TI Field-emitting electron source
IN Yamakishi, Toshio; Nanba, Masakazu; Okazaki, Saburo; Hirano, Yoshiyuki; Okamura, Noritomo; Katsuhara, Yukinori; Inoue, Shigeru
PA Japan Broadcasting Corp., Japan; Hitachi Electronics Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000323011	A2	20001124	JP 1999-129122	19990510

AB The electron source, from which electrons are emitted by applying elec. voltage on a cathode and gate electrodes facing each other and the space sandwiched between the electrodes involves a porous elec. insulator. The elec. insulator has fine pores extended in the thickness direction as a result of anodization and pores involve **emitters**.
Alternatively, the pores in the elec. insulator are formed by etching through a mask made of an anodized porous film having fine pores in the direction perpendicular to the thickness direction. The electron source with having submicron- to nano-order **emitters** can be obtained without photolithog., i.e., at low cost.

IT Anodization
Electric insulators

Etching
Field **emitters**
(field-emitting electron source having elec. insulator involving **emitter** in micropores formed by anodization or etching)

L3 ANSWER 4 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:665686 HCAPLUS
DN 133:246254
TI Electron-emitting material with low evaporation during discharge and resistant to ion sputtering and its low-cost fabrication
IN Hamada, Munemitsu; Takeishi, Akira; Takahashi, Makoto; Matsuoka, Dai; Yodogawa, Masatada; Harada, Hiraku
PA TDK Corporation, Japan
SO Eur. Pat. Appl., 37 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 1037244	A2	20000920	EP 2000-301668	20000301
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 3078287	B1	20000821	JP 1999-346966	19991206
JP 2000331603	A2	20001130		

AB An electron-emitting material contains a 1st metal component selected from Ba, Sr and Ca and a 2nd metal component selected from Ta, Zr, Nb, Ti and Hf and also contains oxynitride perovskite. The electron-emitting material has improved electron emission characteristics, restrained evapn. at elevated temps., and minimized consumption by ion sputtering. The electron-emitting material was prepd. by firing a metal component-contg. raw material disposed in proximity to C in a N gas-contg. atm. to thereby create oxynitride perovskite.
IT Cathodes
Electrodes
Field emission cathodes
Photocathodes
Sputtering cathodes
(fabrication of electron **emitters**)

L3 ANSWER 5 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:574048 HCAPLUS
DN 133:153231
TI Antireflection coated refractory metal matched IR **emitter** for use in thermophotovoltaic generators
IN Fraas, Lewis M.; Magendanz, Galen; Avery, James E.
PA Jx Crystals Inc., USA
SO PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000048231	A2	20000817	WO 1999-US24736	19991022
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN,				

WO 1999-US24736 W 19991022

AB Thermophotovoltaic (TPV) elec. power generators have **emitters** with IR outputs matched with usable wavelengths for converter cells. The **emitters** have durable substrates, optional refractory isolating layers, conductive refractory metal or inter-metallic **emitter** layers, and refractory metal oxide antireflection layers. SiC substrates have W or TaSi2 **emitter** layers and 0.14 .mu. ZrO2 or Al2O3 antireflection layers used as IR **emitters** for GaSb converter cells in TPV generators.

IT 409-21-2, Silicon carbide (SiC), uses 1314-23-4, Zirconium oxide (ZrO2), uses **1314-61-0**, Tantalum pentoxide 1344-28-1, Alumina, uses 7439-98-7, Molybdenum, uses 7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-33-7, Tungsten, uses 12034-80-9, Niobium disilicide 12039-79-1, Tantalum silicide (TaSi2) 12039-83-7, Titanium disilicide 12039-87-1, Vanadium disilicide 12064-03-8 12597-68-1, Stainless steel, uses 12611-97-1, Kanthal 273921-59-8, Nichrome
RL: DEV (Device component use); USES (Uses)
(antireflection coated refractory metal matched IR **emitter** for use in thermophotovoltaic generators)

L3 ANSWER 6 OF 36 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:541583 HCAPLUS

DN 133:289670

TI Studies on the interaction between thin film materials and Mo field **emitter** arrays

AU Chalamala, Babu R.; Reuss, Robert H.

CS Flat Panel Display Division, Motorola Incorporated, Tempe, AZ, 85284, USA

SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (2000), 18(4), 1825-1832
CODEN: JVTBD9; ISSN: 0734-211X

PB American Institute of Physics

DT Journal

LA English

AB A simple method for the evaluation of materials suitable for the fabrication of field emission vacuum microelectronic devices is presented. Since there can be a wide range of electron and ion interactions with the device, it is important to be able to quickly assess if a material may have a particular adverse effect on emission performance under operational conditions. The technique is based on the sensitivity of a large field **emitter** array to the outgassing or desorption of gas species from thin films under electron beam excitation. Mo field **emitter** arrays degraded rapidly with stainless steel anodes coated with various oxide materials. The extent of degrdn. is the most rapid with SiO2, Si3N4, and MoO3 thin films. Stainless steel anodes with Mo and Nb thin films show a faster degrdn. rate than stainless steel anodes, most likely because of native oxides grown during processing and handling. The emission behavior in the presence of Ir, Pd, Al, Zn, and Ti metal films and barrier materials like C and TaN is similar to stainless steel ref. data. Once the oxide films are covered with barrier layers like C and TaN, emission decay rates approach the values obtained with stainless steel ref. anodes. The obsd. emission current degrdn. is consistent with a model based on the liberation of oxygen from the surface of electron beam bombarded materials. Using controlled oxygen exposure expts., the authors detd. the equiv. local oxygen pressures in the presence of various thin films. With thin films of Nb, ZrO2, Ta2O5, MgO, Nb2O5, and Al2O3, the emission degrdn. is akin to having a local O2 partial pressure in the 1 .times. 10-7-1 .times. 10-6 Torr range and with Mo, MoO3, Si3N4, and SiO2, this is equiv. to having local O2 pressures of 1 .times. 10-5 Torr.

IT Electron beams

Field emission
Field **emitters**
Microelectronic devices
(studies on the interaction between thin film materials and Mo field **emitter** arrays)

IT 7439-98-7, Molybdenum, properties
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(studies on the interaction between thin film materials and Mo field **emitter** arrays)

IT 1309-48-4, Magnesium oxide (MgO), properties 1313-27-5, Molybdenum oxide (MoO3), properties 1313-96-8, Niobium oxide (Nb2O5) 1314-23-4, Zirconium oxide (ZrO2), properties **1314-61-0**, Tantalum oxide (Ta2O5) 1344-28-1, Alumina, properties 7429-90-5, Aluminum, properties 7439-88-5, Iridium, properties 7440-03-1, Niobium, properties 7440-05-3, Palladium, properties 7440-32-6, Titanium, properties 7440-66-6, Zinc, properties 7631-86-9, Silica, properties 12033-89-5, Silicon nitride (Si3N4), properties 12597-68-1, Stainless steel, properties
RL: MOA (Modifier or additive use); PRP (Properties); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(studies on the interaction between thin film materials and Mo field **emitter** arrays)

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 7 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:474520 HCAPLUS
DN 133:96633
TI Image display devices
IN Mitamura, Satoshi
PA Sony Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000195671	A2	20000714	JP 1998-368000	19981224

AB The devices comprise: (1) a glass substrate; (2) a red, a green and a blue phosphor matrix; (3) an ITO 1st electrode stripe array (.dblvert. X); (4) a UV-emitting layer (laminate); (5) a dielec. layer; and (6) a 2nd electrode (.dblvert. Y), where (4) typically comprises AlN:Gd, or a semiconductor LED comprising a GaN/AlGaN-MQW laminate.

IT Fluorescent substances
Optical imaging devices
Quantum well devices
Quantum well heterojunctions
UV radiation
(image display devices)

IT **1314-61-0**, Tantalum oxide (Ta2O5) 1314-98-3, Zinc sulfide (ZnS), uses 7439-98-7, Molybdenum, uses 12340-04-4, Yttrium oxide sulfide (Y2O2S) 24304-00-5, Aluminum nitride (AlN) 50926-11-9, ITO 117656-36-7, Aluminum gallium nitride (Al0.3Ga0.7N) 120831-83-6, Aluminum gallium nitride (Al0.25Ga0.75N) 125297-45-2, Aluminum gallium nitride al0.2ga0.8n
RL: DEV (Device component use); USES (Uses)
(image display devices)

IT 7429-90-5, Aluminum, uses 7440-22-4, Silver, uses 7440-27-9, Terbium, uses 7440-50-8, Copper, uses 7440-53-1, Europium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(image display devices)

L3 ANSWER 8 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:470322 HCAPLUS
DN 133:98270
TI Fabrication of memory elements from composites of phase-change materials and dielectric materials
IN Ovshinsky, Standford R.; Czubatyj, Wolodymyr; Strand, David A.; Klersy, Patrick J.; Kostylev, Sergey; Pashmakov, Boil
PA Energy Conversion Devices, Inc., USA
SO U.S., 12 pp., 5825046Cont.-in-part of U.S. 5,825,046.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6087674	A	20000711	US 1998-63174	19980420
	US 5825046	A	19981020	US 1996-739080	19961028
	KR 2000052840	A	20000825	KR 1999-703674	19990427
PRAI	US 1996-739080	A2	19961028		

AB An elec. operated, single cell memory element comprising: a vol. of memory material defining a single-cell memory element, the memory material comprising a heterogeneous mixt. of a phase-change material and a dielec. material; and means for delivering an elec. signal to at least a portion of the vol. of memory material. An elec. operated, single-cell memory element comprising: a vol. of memory material defining the single-cell memory element, the memory material comprising a phase-change material and a dielec. material where the phase-change material has a plurality of detectable resistivity values and can be set directly to one of the resistivity values without the need to be set to a specific starting or erased resistivity value, regardless of the previous resistivity value of the material, in response to an elec. signal; and means for delivering the elec. signal to at least a portion of the vol. of memory material.

IT 1310-53-8, Germanium oxide (GeO2), processes 1314-23-4, Zirconium oxide (ZrO2), processes **1314-61-0**, Tantalum oxide (Ta2O5) 1314-98-3, Zinc sulfide (ZnS), processes 7783-40-6, Magnesium fluoride (MgF2) 7789-75-5, Calcium fluoride (CaF2), processes 10043-11-5, Boron nitride, processes 12025-34-2, Germanium sulfide (GeS2) 12033-89-5, Silicon nitride, processes 13759-10-9, Silicon sulfide (SiS2) 24304-00-5, Aluminum nitride (AlN) 25583-20-4, Titanium nitride (TiN) 25658-42-8, Zirconium nitride (ZrN) 39327-44-1, Lithium fluoride (LiF2)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(dielec. materials; fabrication of memory elements from composites of phase-change materials and)

IT 12033-89-5D, Silicon nitride, non-stoichiometric
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(fabrication of memory elements from composites of phase-change materials and)

L3 ANSWER 9 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:398502 HCAPLUS
DN 131:109743

TI Doping effects of Groups III, IV, or V elements on the **emitter** of CRT oxide cathodes
AU Hayashida, Yoshiki; Ozawa, Tetsuro; Sakurai, Hiroshi
CS Matsushita Electronics Corporation, Osaka, 569-1193, Japan
SO Appl. Surf. Sci. (1999), 146(1-4), 7-11
CODEN: ASUSEE; ISSN: 0169-4332
PB Elsevier Science B.V.
DT Journal
LA English
AB Doping effects on CRT oxide cathodes was studied with dopant elements of groups III, IV, or V. Doping effects correspond neg. to both resistance of the **emitter** layer and m.ps. of dopants. The doping effect mechanism is discussed in terms of elec. cond. of the **emitter** layer with interaction between dopants and reducing agents. Based on the idea that diffusibility of dopants could improve cond., the highest doping effect was achieved with ZrO2 copptn. doping.
IT Melting point
(dopant; doping effects of Groups III, IV, or V element oxides on the **emitter** of CRT barium strontium oxide cathodes)

IT 1308-96-9, Europium oxide (Eu2O3) 1313-96-8, Niobium oxide (Nb2O5) 1314-23-4, Zirconium oxide (ZrO2), properties 1314-36-9, Yttrium oxide (Y2O3), properties **1314-61-0**, Tantalum oxide (Ta2O5) 1314-62-1, Vanadium oxide (V2O5), properties 12037-01-3, Terbium oxide (Tb4O7) 12055-23-1, Hafnium oxide (HfO2) 12060-08-1, Scandium oxide (Sc2O3) 13463-67-7, Titanium oxide (TiO2), properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(doping effects of Groups III, IV, or V element oxides on the **emitter** of CRT barium strontium oxide cathodes)

L3 ANSWER 10 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:296754 HCAPLUS
DN 130:319638
TI Electron **emitters** having an etching-resistant insulator
IN Nakanishi, Masayuki; Chin, Kazutami; Shimnojo, Norihide
PA Ise Electronics Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11120897	A2	19990430	JP 1997-276950	19971009

AB The title **emitters** comprise pointy-projection **emitter** electrodes formed on a Si substrate, an insulator layer having openings to expose around the tops of the pointy electrodes, and gate electrodes each formed around the **emitters** on the insulator for impression of voltage across the **emitters** and the gate electrodes. The insulator layer is made from an etching resistant against HF and may be chosen from Al2O3, TiO2, Ta2O5, or Si3N4. The use of the insulator material prevents over-etching of the insulator in otherwise causing short-circuiting the **emitter** and gate electrodes.
IT Cathodes
(electron **emitters** having an etching-resistant insulator)

L3 ANSWER 11 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:292322 HCAPLUS

DN 131:26128
TI Development of the oxygenated thermionic energy converters utilizing the sputtered metal oxides as a collector
AU Fukuda, Ryuzo; Kasuga, Yasuhiro; Kato, Ken; Shimizu, Sadaaki
CS Electrotechnical Laboratory, Tsukuba, 305-8568, Japan
SO AIP Conf. Proc. (1999), 458(Space Technology and Applications International Forum--1999, Pt. 2), 1444-1451
CODEN: APCPCS; ISSN: 0094-243X
PB American Institute of Physics
DT Journal; General Review
LA English
AB A review with 7 refs. Refractory metal oxides such as NbOx, WOx, MoOx, TaOx, PtOx and Silver oxide (AgOx) were studied for an oxygenated thermionic converter and a low work function collector. The metal oxide materials were deposited on metal substrates by RF sputtering in the Ar/O2 gas mixt. to fabricate **collector electrodes**. Work function values of the **collector electrodes** were evaluated by cesium plasma immersion technique. Very low work function values were obtained, for instance 1.25 V as .phi.c of AgOx. A research thermionic energy converter with a plane parallel type of a polycryst. W **emitter** and the metal oxide collectors (AgOx, NbOx and PtOx), was set up and the power generation expts. were conducted. In the case of the W-AgOx thermionic converter, the barrier index VB was 2.05 V. Similarly VB = 2.15V for the W-NbOx converter, VB = 2.25V for the W-PtOx converter.
IT Energy converters
(thermonic; development of the oxygenated thermionic energy converters utilizing the sputtered metal oxides as a collector)
IT 1314-35-8, Tungsten oxide (WO3), properties 11098-99-0, Molybdenum oxide 11129-89-8, Platinum oxide 12627-00-8, Niobium oxide 20667-12-3, Silver oxide (Ag2O) **59763-75-6**, Tantalum oxide
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(development of the oxygenated thermionic energy converters utilizing the sputtered metal oxides as a collector)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 12 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:719906 HCAPLUS
DN 130:44558
TI Enhancement of Electrochemical Hot Electron Injection into Electrolyte Solutions at Oxide-Covered Tantalum Electrodes by Thin Platinum Films
AU Sung, Yung-Eun; Bard, Allen J.
CS Department of Chemistry and Biochemistry, The University of Texas at Austin, Austin, TX, 78712, USA
SO J. Phys. Chem. B (1998), 102(49), 9806-9811
CODEN: JPCBFK; ISSN: 1089-5647
PB American Chemical Society
DT Journal
LA English
AB The previously reported exptl. evidence for hot soln.-phase electrons generated at Ta2O5-covered Ta electrodes in both acetonitrile and aq. solns. using electrogenerated chemiluminescence (**ECL**) and electrochem. measurements was extended by observing the effect of thin Pt films. Hot electron injection was monitored by noting the photoemission following redn. of the thianthrene radical cation (TH.bul.+), signaling the direct formation of the excited state (TH.bul.+ + ehs .fwdarw. TH*), a process that does not occur at a bulk Pt electrode. We report the enhancement of hot electron injection efficiency by a factor of .apprx.5

by deposition of a thin (<40 nm) Pt film on the Ta/Ta2O5 electrode. This enhancement of **ECL** efficiency at the metal/oxide/Pt/liq. interface is ascribed to the suppression of the Ta2O5 surface states by the Pt film. The effect of Pt film thickness was investigated and showed a decrease in emission with increased film thickness, in accord with the expected mean free path of hot electrons in the Pt (ehPt). In examg. the Ta/Ta2O5/Pt/soln. system, one can contrast the behavior obsd. when an elec. connection is made directly to the Pt with that obsd. when a connection to the Pt is made via the Ta, where ehPt species are generated.

IT Electric potential
(effect on electrogenerated luminescence of thianthrene during electroredn. on Ta/Ta2O5 and Ta/Ta2O5/Pt electrodes)

IT Films
(formation, of tantalum pentoxide on tantalum and platinum on oxide covered tantalum)

IT X-ray photoelectron spectra
(of Ta/Ta2O5 and Ta/Ta2O5/Pt electrodes)

IT Surface structure
(of Ta/Ta2O5 and Ta/Ta2O5/Pt electrodes by AFM)

IT Thickness
(of platinum films on oxide covered tantalum electrodes, effect on electrochem hot electron injection into electrolyte soln)

IT Sputter deposition
(of platinum on oxide covered tantalum electrode)

IT Anodizing
(of tantalum in ammonium tartrate soln.)

IT Electrochemiluminescence
(of thianthrene radical cation following of redn. on oxide covered tantalum electrode in acetonitrile)

IT 3164-29-2, Ammonium tartrate
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(anodization of tantalum in soln. of)

IT 7440-06-4, Platinum, properties
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(deposition on oxide covered tantalum electrode by sputtering)

IT 7440-25-7, Tantalum, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(electrochem hot electron injection into electrolyte soln at oxide covered tantalum electrode by thin platinum film)

IT 183748-02-9, Electron
RL: PRP (Properties)
(electrochem hot electron injection into electrolyte soln. at oxide covered tantalum electrode by thin platinum film)

IT 583-52-8, Dipotassium oxalate
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(electrogenerated luminescence of thianthrene during electroredn. on Ta/Ta2O5 and Ta/Ta2O5/Pt electrodes in soln. of)

IT **1314-61-0**, Tantalum oxide Ta2O5
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(formation on surface of tantalum by anodization in ammonium tartrate soln.)

L3 ANSWER 13 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:719902 HCAPLUS
DN 130:72880
TI Demonstration of Electrochemical Generation of Solution-Phase Hot Electrons at Oxide-Covered Tantalum Electrodes by Direct Electrogenerated

Chemiluminescence
AU Sung, Yung-Eun; Gaillard, Frederic; Bard, Allen J.
CS Department of Chemistry and Biochemistry, The University of Texas at Austin, Austin, TX, 78712, USA
SO J. Phys. Chem. B (1998), 102(49), 9797-9805
CODEN: JPCBFK; ISSN: 1089-5647
PB American Chemical Society
DT Journal
LA English
AB Exptl. evidence for the prodn. of hot electrons in an acetonitrile soln. from a Ta2O5-covered Ta electrode was provided by electrogenerated chemiluminescence (**ECL**) and electrochem. measurements. Electron transfer to soln. species occurred via the Ta2O5 conduction band, as demonstrated by comparative measurements with a no. of 1-electron redox couples at Pt and Ta electrodes. The oxidized forms of thianthrene and a heptamethine cyanine dye were selected as the species capable of direct formation of the excited state and **ECL** upon hot electron injection. The observation of **ECL** emission upon a cathodic potential step (a process that does not occur at a metal electrode) confirmed the occurrence of this process. **ECL** emission at Ta/Ta2O5 was also obsd. during redn. of Ru(bpy)33+ (bpy = bipyridine). Reasons for the low efficiency of the **ECL** process via hot electrons at the metal/metal oxide/soln. interface are discussed.
IT Electrochemiluminescence
Hot electrons
(demonstration of electrochem. generation of soln.-phase hot electrons at oxide-covered tantalum electrodes by direct electrogenerated chemiluminescence)

IT 92-85-3, Thianthrene 69415-17-4
RL: PRP (Properties); RCT (Reactant)
(electrochem. oxidn.: demonstration of electrochem. generation of soln.-phase hot electrons at oxide-covered tantalum electrodes by direct electrogenerated chemiluminescence)
IT 91-15-6, Phthalonitrile 118-75-2, properties 129-00-0, Pyrene, properties 486-25-9, 9-Fluorenone 527-17-3, Duroquinone 1518-16-7, TCNQ 67994-95-0 88505-29-7, Bis(tetrabutylammonium) peroxydisulfate
RL: PRP (Properties); RCT (Reactant)
(electrochem. reactions at platinum and at Ta/Ta2O5: conduction band energies of Ta2O5 and electrochem. generation of soln.-phase hot electrons at oxide-covered tantalum electrodes by direct electrogenerated chemiluminescence)
IT 91-20-3, Naphthalene, properties
RL: PRP (Properties); RCT (Reactant)
(electrochem. reactions at platinum: conduction band energies of Ta2O5 and electrochem. generation of soln.-phase hot electrons at oxide-covered tantalum electrodes by direct electrogenerated chemiluminescence)

L3 ANSWER 14 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:196267 HCAPLUS
DN 128:264977
TI Thin-film electron **emitter** for display apparatus
IN Kusunoki, Toshiaki; Suzuki, Mutsumi
PA Hitachi, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10079221	A2	19980324	JP 1996-233914	19960904

AB The invention relates to a thin-film MIM electron **emitter** for display app., wherein the use of a refractory metal lower electrode affords resistance to electromigration and stress migration.

IT Cathodes
Optical imaging devices
(MIM; thin-film electron **emitter** for display app.)

IT **1314-61-0**, Tantalum oxide 1344-28-1, Alumina, uses 7429-90-5, Aluminum, uses 7440-25-7, Tantalum, uses
RL: DEV (Device component use); USES (Uses)
(thin-film electron **emitter** for display app.)

L3 ANSWER 15 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:785859 HCAPLUS
DN 128:14896
TI Development of refractory metal oxide collector materials and their thermionic converter performance
AU Fukuda, R.; Kasuga, Y.; Katoh, K.
CS Energy Division, Electechnical Laboratory, Tsukuba, 305, Japan
SO Funct. Graded Mater. 1996, Proc. Int. Symp., 4th (1997), Meeting Date 1996, 647-654. Editor(s): Shiota, Ichiro; Miyamoto, Yoshinari. Publisher: Elsevier, Amsterdam, Neth.
CODEN: 65KZAW
DT Conference
LA English
AB Refractory metal oxides of NbOx, WOx, TaOx, and AgOx were studied for use as a high-performance collector. The metal oxide materials were deposited on metal substrates by radio-frequency sputtering in the Ar/O2 gas mixt., in which the partial pressure of O2 was deliberately set at the lower values in order to sputter in the stoichiometrically oxygen gas deficient conditions. Work function of the metal oxides was measured by cesium plasma immersion technique. The obtained min. work function values of AgOx, NbOx, WOx, and TaOx were 1.25, 1.38, 1.42, and 1.43 eV, resp. NbOx and AgOx are considered the most promising for a collector. A thermionic converter with a plane parallel type of a polycryst. W **emitter** and AgOx collector, and an interelectrode spacing 0.1 mm at room temp., was set up and the power generation expts. were conducted. The max. power of 3.9 W/cm2 (voltage 0.6V; c.d. 6.5 A/cm2) was obtained under the unignited mode operation at 1583 K. The barrier index was 1.5 V at 1578 K. Based on the exptl. results, a new type of a functionally graded material collector was proposed for a micro-gap thermionic converter.

IT Thermionic energy converters
(development of refractory metal oxide collector materials and their thermionic converter performance)

IT Refractory metal oxides
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(development of refractory metal oxide collector materials and their thermionic converter performance)

IT 1313-96-8, Niobium oxide 1314-35-8, Tungsten oxide, uses **1314-61-0**, Tantalum oxide 20667-12-3, Silver oxide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(collector; development of refractory metal oxide collector materials and their thermionic converter performance)

IT 7440-33-7, Tungsten, uses

RL: DEV (Device component use); USES (Uses)
(thermionic energy converter with **emitter** of; development of refractory metal oxide collector materials and their thermionic converter performance)

L3 ANSWER 16 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:248255 HCAPLUS
DN 124:304838
TI Manufacture of field-emission cold cathode
IN Yoshihara, Takuya
PA Nippon Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08031308	A2	19960202	JP 1994-182802	19940712

AB The manuf. involves the following steps: (1) etching a deposited layer on a substrate to form the **emitter**, (2) coating the **emitter** with an insulating film and a gate electrode, (3) etching back to open the gate electrode, and (4) exposing the top of the **emitter**. The first deposited layer may be Ta. The insulating film may be an anodized film.
IT Cathodes
(field-emission, manuf. of field-emission cold cathode by etching **emitter**)
IT 7440-25-7, Tantalum, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**emitter**; manuf. of field-emission cold cathode by etching **emitter**)
IT **1314-61-0P**, Tantalum oxide
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(insulating film; manuf. of field-emission cold cathode by etching **emitter**)

L3 ANSWER 17 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:921960 HCAPLUS
DN 123:327726
TI Capacitors, electrodes, or wiring structures for LSI
IN Numata, Ken; Aoki, Katsuhiro; Fukuda, Yukio; Nishimura, Akitoshi
PA Texas Instruments Inc., USA
SO Eur. Pat. Appl., 24 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 671768	A2	19950913	EP 1995-102002	19950214
EP 671768	A3	19970820		
R: DE, FR, GB, IT, NL				
JP 07226444	A2	19950822	JP 1994-39093	19940214
US 5654567	A	19970805	US 1996-724159	19961001
PRAI JP 1994-39093		19940214		
US 1995-388330		19950214		

AB In the capacitor, electrode, or wiring structure having an .alpha.-**emitter** (in particular, a Pt electrode), a shielding layer is provided, made of Ni, Co, Cu, and/or W, their compds. or alloys made of .gtoreq.2 of them, or compds. and alloys made of these metals and Si. It is possible to shield the .alpha.-particles effectively, to suppress generation of soft errors, and to enable use of Pt and other new materials in the electrodes and wiring, and to reduce the cost of the molding resin.

IT Electric capacitors
Electrodes
(for LSI)

IT Electric circuits
(integrated, large-scale; .alpha.-particle shielding in capacitors and electrodes and wiring structures for)

IT Electric conductors
(interconnections, for LSI)

IT 12587-46-1, Alpha particle
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(shielding against; in capacitors and electrodes and wiring structures for LSI)

IT **1314-61-0**, Tantalum oxide 7440-02-0, Nickel, processes 7440-06-4, Platinum, processes 7440-33-7, Tungsten, processes 7440-48-4, Cobalt, processes 7440-50-8, Copper, processes 12060-59-2, Strontium titanate (SrTiO3) 12626-81-2, Lead titanium zirconium oxide (PbTi0-1Zr0-1O3) 37303-24-5, Barium strontium titanium oxide (Ba0-1Sr0-1TiO3)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(.alpha.-particle shielding in capacitors and electrodes and wiring structures contg.)

L3 ANSWER 18 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:895143 HCAPLUS
DN 123:318684
TI High efficient radiation stable AlGaAs/GaAs solar cells with internal Bragg reflector
AU Andreev, V. M.; Kalinovsky, V. S.; Komin, V. V.; Kochnev, I. V.; Lantratov, V. M.; Shvarts, M. Z.
CS A. F. Phys.-Tech. Inst., St.-Petersburg, 194021, Russia
SO Eur. Space Agency, [Spec. Publ.] ESA SP (1995), ESA SP-369(Vol. 2, Proceedings of the European Space Power Conference, 1995, Vol. 2), 367-70
CODEN: ESPUD4; ISSN: 0379-6566
DT Journal
LA English
AB The work presents an investigation of solar cells based on AlGaAs/GaAs heterostructures with internal Bragg reflector as back-surface reflectors grown by low-pressure MOCVD on n-GaAs substrates in horizontal resistively heated reactor. The typical structure consists of: Bragg reflector having 12 periods, n-GaAs base layer with thickness of 1.5-2.5 .mu.m, 0.4-0.5 .mu.m thick p-GaAs **emitter**, 0.07 .mu.m p-AlGaAs passivating window and top p-GaAs contact layers. The Bragg reflector with reflectance max. centered at wavelength 860 nm consists of twelve pair of AlAs/GaAs layers. Resulting Bragg reflector thicknesses have been 0.072 .mu.m for AlAs and 0.059 .mu.m for GaAs. In the case a peak of reflectance spectrum is close to unite in area 830-900 nm. This multi-layer quasi-dielec. stack would selectively reflect weakly absorbed photons with energies near the GaAs band gap for a second pass through the photoactive region increasing the photocurrent. The employment of the Bragg reflector allows to increase the external quantum efficiency in the

long wavelength of spectrum, to fabricate simultaneously thinner n-GaAs base layer and to increase the radiation resistance at 1 MeV and 3.75 MeV electron irradn. up to dose 1x1016 e/cm2 and 3x1015 e/cm2 correspondingly. The use of the internal Bragg reflector and Ta2O5 as antireflecting coating and prismatic cover allowed us to obtain efficiency 23.4% (17.7 suns, AMO, 25.degree.).

IT Photoelectric devices, solar
(high efficient radiation stable AlGaAs/GaAs solar cells with internal Bragg reflector)

IT Electron beam
(irradn. by; high efficient radiation stable AlGaAs/GaAs solar cells with)

IT Optical reflectors
(Bragg, internal; high efficient radiation stable AlGaAs/GaAs solar cells with)

IT **1314-61-0**, Tantalum pentoxide
RL: TEM (Technical or engineered material use); USES (Uses)
(antireflection coating; high efficient radiation stable AlGaAs/GaAs solar cells with)

IT 1303-00-0, Gallium arsenide, uses 37382-15-3, Aluminum gallium arsenide ((Al,Ga)As)
RL: DEV (Device component use); USES (Uses)
(high efficient radiation stable AlGaAs/GaAs solar cells with)

L3 ANSWER 19 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:769818 HCAPLUS
DN 123:158267
TI Electron **emitters**
IN Tantani, Yasushi; Oota, Norio
PA Dainippon Printing Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 07094084	A2	19950407	JP 1993-259045	19930922

PI JP 07094084 A2 19950407 JP 1993-259045 19930922

AB ITO, Ta, Ta2O5 films, and Al cold cathodes are successively formed on glass substrates, resists are deposited on the whole surface, light projection from the bottom side and development leave the resists only in the neighborhood of the cathodes, insulator films (e.g., SiO2) and gate electrode films are formed on the whole surface, and the resists are lifted, leaving the gate electrode films around the cathodes.

IT Cathodes
(field-emission, for electron emission)

IT **1314-61-0**, Tantalum oxide (Ta2O5) 7429-90-5, Aluminum, uses 7440-25-7, Tantalum, uses 7631-86-9, Silica, uses 50926-11-9, Indium tin oxide
RL: DEV (Device component use); USES (Uses)
(electron **emitters** with cold cathodes)

L3 ANSWER 20 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:613159 HCAPLUS
DN 123:24173
TI Field-emission cathodes
IN Ito, Shigeo
PA Futaba Denshi Kogyo Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07094075	A2	19950407	JP 1993-260389	19930927

AB The spindle-type field-emission cathodes (having corn-shaped **emitters** on a cathode electrode through a resistance layer) have conducting insulators between the resistance layer and the **emitters**, which are insulated by short-circuit current between the gate and the **emitters**. The conducting insulators may be formed on each **emitter**. The conducting insulators comprising Al, Ag, MnO2, or (p-n junction) Se may be insulated through electromigration. The resistance layer may comprise amorphous Si or Ta2O5.

IT Cathodes
(field-emission, field-emission cathodes with conducting insulator on **emitters**)

IT 1313-13-9, Manganese dioxide, uses 7429-90-5, Aluminum, uses 7440-22-4, Silver, uses 7782-49-2, Selenium, uses
RL: DEV (Device component use); USES (Uses)
(field-emission cathodes with conducting insulator on **emitters**)

IT **1314-61-0**, Tantalum oxide (Ta2O5) 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(resistance layers; field-emission cathodes with conducting insulator on **emitters**)

L3 ANSWER 21 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:330517 HCAPLUS
DN 122:94649
TI Manufacture of field emission cathodes
IN Ito, Shigeo; Watanabe, Teruo; Ochiai, Hisataka; Ootsu, Kazuyoshi; Taniguchi, Masateru
PA Futaba Denshi Kogyo Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 06124649	A2	19940506	JP 1992-270580	19921008
JP 3180466	B2	20010625		

AB Title field emission cathode is manufd. by forming cathode conductor layer, insulator layer and gate layer on an insulating substrate, opening holes through the insulator and the gate layers, anodizing the cathode conductors in the holes to form resistance layers in an electrolyte in which the cathode conductor layer is used as the anode and a passive electrode as the cathode, then forming cone-shaped Mo **emitters** on the resistance layers. This simple manuf. process provide uniform independent resistance layer for each **emitter**.

IT Anodization
(manuf. of field emission cathodes)

IT Cathodes
(field-emission, manuf. of)

IT 7439-98-7, Molybdenum, uses 7440-25-7, Tantalum, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)

(manuf. of field emission cathodes contg.)
IT **1314-61-0**, Tantalum oxide (ta2o5)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(manuf. of field emission cathodes contg.)

L3 ANSWER 22 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:242453 HCAPLUS
DN 122:21952
TI Cathode **emitters** attached with a functional film
IN Fujii, Masaru; Takizawa, Tomonori; Maeda, Mikako
PA Mitsubishi Electric Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06139964	A2	19940520	JP 1992-281418	19921020
JP 2847003	B2	19990113		

AB A functional film adhered on the face of cathode **emitter** bulbs is a transparent plastic substrate coated with a functional layer which has .gtoreq.2 functions comprising antistatic elec. conducting, contrast-enhancement color-filtering, reflection-preventing, and/or surface-roughening properties.
IT Optical filters
(adhered for cathode **emitter** bulb face)
IT Electric conductors
(for antistatic film for cathode **emitter** bulb face)
IT Optical reflection
(for cathode **emitter** bulb face)
IT Luminescent screens
(cathodo-, multifunctional film adhered on tube face for)
IT 1314-23-4, Zirconium oxide (ZrO2), processes **1314-61-0**, Tantalum oxide (Ta2O5) 1314-98-3, Zinc sulfide (ZnS), processes 7631-86-9, Silica, processes 7783-40-6, Magnesium fluoride (MgF2) 13463-67-7, Titanium oxide (TiO2), processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(reflection-preventive film for cathode **emitter** bulb face)

L3 ANSWER 23 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:593897 HCAPLUS
DN 119:193897
TI Field-emission cathodes
IN Ito, Shigeo; Watanabe, Teruo; Taniguchi, Masateru
PA Futaba Denshi Kogyo Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05094760	A2	19930416	JP 1991-276233	19910930
JP 2720662	B2	19980304		

AB The field-emission cathodes comprise an insulative substrate, a cathodic electrode formed on the substrate, a thin Ta2O5 layer, as a resistor,

formed on the cathodic electrode, and an **emitter** connected to the cathodic electrode via through the resistor layer. The Ta2O5 layer has a uniform thickness since it can be formed by the anodic oxidn. method. The field-emission cathodes are used as electron sources for various display devices, sensors, etc.

IT Sensors
(field-emission cathodes for)

IT Cathodes
(field-emission, tantalum oxide resistor layer in, for display devices and sensors)

IT **1314-61-0**, Tantalum pentoxide
RL: TEM (Technical or engineered material use); USES (Uses)
(resistor layer, in field-emission cathodes, for display devices and sensors)

L3 ANSWER 24 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:542972 HCAPLUS
DN 119:142972
TI Structure of high-efficiency solar cell and especially crystalline silicon solar cell
IN Schmidt, Wilfried; Wahl, Gerhard
PA Deutsche, Aerospace A.-G., Germany
SO Ger. Offen., 7 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4217428	A1	19930617	DE 1992-4217428	19920527
PRAI	DE 1991-4140488		19911209		

AB The solar cell for 1- or 2-side illumination has an n-p structure with p-type Si substrate and n-type **emitter** on the light-incident side. The solar cell of an optimal efficiency has on the light-incident side deep, on the surface low-doped n+ or p+ layers, integrated with higher-doped n++ or p++ layers on their region of ohmic contact surfaces of metallic contacts. The prepn. stages of the solar cell include deposition of absorption layers and Si oxide masking layers, removal of masking layers of the window opening regions by laser irradn. or etching with mixts. contg HF, and diffusion treatments.

IT Photoelectric devices, solar
(silicon, structure and manuf. of high-efficiency cryst.)

IT 12033-89-5, Silicon nitride, properties 13463-67-7, Titanium oxide, uses **59763-75-6**, Tantalum oxide
RL: PRP (Properties)
(photoelec. solar cells contg. absorption layers of, cryst. silicon, structure and manuf. of high-efficiency)

IT 7440-21-3, Silicon, miscellaneous
RL: MSC (Miscellaneous)
(photoelec. solar cells, cryst., structure and manuf. of high-efficiency)

L3 ANSWER 25 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:181663 HCAPLUS
DN 118:181663
TI Field electron **emitters**
IN Komatsu, Hiroshi
PA Seiko Epson Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04280030	A2	19921006	JP 1991-40372	19910307

AB A field electron **emitter**, which contains a protruded cathode for emitting electron, a gate electrode to apply an elec. field on the cathode, and an anode to collect emitted electron has a varistor which is series-connected with the cathode. The app. has stable electron flux.
IT Electron sources
(**emitters**, field-based, contg. varistors)
IT Electric resistors
(varistors, field electron **emitters** contg.)
IT **59763-75-6**, Tantalum oxide
RL: DEV (Device component use); USES (Uses)
(varistors from, field electron **emitters** contg.)

L3 ANSWER 26 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:25051 HCAPLUS
DN 118:25051
TI Semiconductor base unit for solar cells
IN Eyckmans, Marc
PA Telefunken Systemtechnik GmbH, Germany
SO Ger. Offen., 4 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 4110256	A1	19921001	DE 1991-4110256	19910328

AB The unit of Si having a diffused high-ohmic **emitter** has a 3-layer cover with a plurality laser-inscribed slits. The cover layers consist of a 5-30-nm SiO2 or SiC base layer for passivating the semiconductor surface, a .apprx.70-nm TiOx, Si3N4, or Ta2O5 antireflection middle layer, and a SiO2 top layer. A 2nd low-ohmic **emitter** is diffused only in the slit regions.
IT Photoelectric devices, solar
(silicon, with multilayered cover and laser-inscribed slits)
IT 409-21-2, Silicon carbide, uses **1314-61-0**, Tantalum pentoxide 7631-86-9, Silica, uses 12033-89-5, Silicon nitride, uses 13463-67-7, Titanium oxide (TiO2), uses
RL: USES (Uses)
(cover contg. layer of, silicon solar cells with multilayer)
IT 7440-21-3, Silicon, uses
RL: USES (Uses)
(photoelec. solar cells, with multilayered cover and laser-inscribed slits)

L3 ANSWER 27 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1990:244364 HCAPLUS
DN 112:244364
TI Semiconductor device having gold top layer-containing laminated electrode
IN Takabe, Akio
PA NEC Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 2 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 02026022	A2	19900129	JP 1988-176623	19880714

AB The title device has a substrate, an element area, an elec. insulating film, and a Au top layer-contg. laminated electrode set in contacting with the element area through a hole on the insulating film, whose surface including the electrode is coated with Ti oxide and/or Ta oxide and overcoated with a Si oxide film. The device with adhesion between the Au layer and the oxide layer shows reliability. Thus, a semiconductor device having an **emitter** electrode and a base electrode both comprising laminated Ti, Pt, and Au layers was sputtered to form a Ti oxide layer then coated with Si oxide by chem. vapor deposition to give the title device.

IT Electric contacts
(laminated, gold-topped, for semiconductor device)

IT 7440-06-4, Platinum, uses and miscellaneous 7440-32-6, Titanium, uses and miscellaneous
RL: TEM (Technical or engineered material use); USES (Uses)
(gold-topped laminated electrode contg., for semiconductor device)

IT 13463-67-7, Titanium oxide, uses and miscellaneous **59763-75-6**, Tantalum oxide
RL: TEM (Technical or engineered material use); USES (Uses)
(interlayer, for semiconductor device, between gold-topped electrode and silicon oxide protecting layer)

IT 11126-22-0, Silicon oxide
RL: TEM (Technical or engineered material use); USES (Uses)
(protecting film, for semiconductor device)

IT 7440-57-5, Gold, uses and miscellaneous
RL: TEM (Technical or engineered material use); USES (Uses)
(top layer, on electrode, for semiconductor device)

L3 ANSWER 28 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1990:102052 HCAPLUS
DN 112:102052
TI Gallium arsenide solar cells with V-grooved **emitters**
AU Bailey, S. G.; Fatemi, N.; Wilt, D. M.; Landis, G. A.; Thomas, R. D.
CS Lewis Res. Cent., NASA, Cleveland, OH, USA
SO Eur. Space Agency, [Spec. Publ.] ESA SP (1989), ESA SP-294, Vol. 2, Proc. Eur. Space Power Conf., 1989, 515-18
CODEN: ESPUD4; ISSN: 0379-6566
DT Report
LA English
AB GaAs solar cells were fabricated with a V-grooved front surface which demonstrate improved optical coupling and higher short-circuit current compared to planar cells. GaAs homojunction cells were fabricated by organometallic chem. vapor deposition (OMCVD) on an n+ substrate. The V-grooves were formed on the surface with an anisotropic etch, and an n-type buffer and p-type **emitter** were grown by OMCVD, followed by ohmic contacts. Reflectivity measurements show significantly lower reflectance for the microgrooved cell compared to the planar structure. The short circuit current of the V-grooved solar cell is consistently higher than that of the planar controls.

IT Electric current carriers
(concn. of, in gallium arsenide solar cells with V-grooved surface)

IT Optical reflection
(of gallium arsenide V-grooved surface with tantalum pentoxide

antireflection coating, for solar cells)
IT Etching
(anisotropic, V-groove formation on gallium arsenide solar cells by)
IT Photoelectric devices, solar
(microgrooved, gallium arsenide, homojunction, with V-grooved front surface, performance of)
IT **1314-61-0**, Tantalum pentoxide
RL: USES (Uses)
(antireflection coating, V-grooved gallium arsenide solar cell with)
IT 1303-00-0, Gallium arsenide, uses and miscellaneous
RL: USES (Uses)
(photoelec. solar cells, homojunction, with V-grooved front surface, performance of)

L3 ANSWER 29 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1990:88116 HCAPLUS
DN 112:88116
TI Stacked insulator structure thin-film electroluminescent display devices
AU Ohwaki, Junichi; Kozawaguchi, Haruki; Tsujiyama, Bunjiro
CS Opto-Electron. Lab., NTT, Tokai, 319-11, Japan
SO J. Electrochem. Soc. (1990), 137(1), 340-2
CODEN: JESOAN; ISSN: 0013-4651
DT Journal
LA English
AB A large-capacity, 704 .times. 1024 dot, thin film electroluminescent (TFEL) display panel with a d. of 4.2 lines/mm is fabricated by employing a stacked insulator structure. Improvement of the breakdown phenomenon, from propagation to self-healing mode, by interposing a self-healing type insulator between the metal electrode and the second Ta2O5 insulator is discussed. Emission efficiency and luminance are 1.6 and 1.8 times higher, resp., than with conventional TFEL devices. This is accomplished by application of a low-resistivity SiO2 film adjacent to the ZnS:Mn **emitter**.
IT Electroluminescent devices
(film, stacked insulator structure)
IT 1314-98-3, Zinc sulfide, uses and miscellaneous
RL: USES (Uses)
(electroluminescent display device with manganese-doped layer of, stacked insulator structure for)
IT 7439-96-5, Manganese, uses and miscellaneous
RL: USES (Uses)
(electroluminescent display device with zinc sulfide layer contg., stacked insulator structure for)
IT 7429-90-5, Aluminum, uses and miscellaneous 50926-11-9, ITO
RL: USES (Uses)
(electroluminescent thin-film display device with stacked insulator structure and layer of)
IT **1314-61-0**, Tantalum oxide (Ta2O5) 7631-86-9, Silicon dioxide, uses and miscellaneous
RL: USES (Uses)
(insulator stacked structure contg., in thin-film electroluminescent display device)

L3 ANSWER 30 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1988:561913 HCAPLUS
DN 109:161913
TI A superconductor-semiconductor junction three-terminal device and its manufacture
IN Michigami, Osamu; Tanabe, Keiichi; Asano, Hidefumi; Kato, Yujiro; Kubo,

Shugo
PA Nippon Telegraph and Telephone Public Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 63032974	A2	19880212	JP 1986-175485	19860728
JP 07040612	B4	19950501		

AB The title devices include a superconducting base layer, a metal (a superconductor or an ordinary conductor) or semiconductor **emitter** layer contacting the base layer, and a compd. semiconductor collector layer on the other side of the base layer from the **emitter** layer; the collector layer comprises InAsxSb1-x or SbGaxIn1-x solid soln.; the collector and the **emitter** layers, the superconducting base layers, a tunnel barrier layer, and an insulating substrate are formed from lattice-matched materials; and the superconductor is selected from 1 of NbN, NbN-TiN, NbN-VN, NbN-ZrN, NbH-HfN, NbN-NbC, NbN-MoC, NbN-WC, NbC-MoC, NbC-WC, TaC, TaC-MoC, or TaC-WC. Preferably, the tunnel barrier layer or the substrate is selected from 1 of BaF2, MnO, Mn2O3, MnO2, TaO, GeO2, Pb3O4.

IT 1310-53-8, Germanium oxide (GeO2), uses and miscellaneous 1313-13-9, Manganese oxide (MnO2), uses and miscellaneous 1314-41-6, Lead oxide (Pb3O4) 1317-34-6, Manganese oxide (Mn2O3) 1344-43-0, Manganese oxide (MnO), uses and miscellaneous 7787-32-8, Barium fluoride (BaF2) **12035-90-4**, Tantalum oxide (TaO) 12070-06-3, Tantalum carbide (TaC) 12274-94-1, Niobium carbide nitride (Nb(C,N)) 24621-21-4, Niobium nitride (NbN) 110770-52-0, Tantalum tungsten carbide ((Ta,W)C) 116738-93-3, Molybdenum niobium carbide nitride ((Mo,Nb)(C,N)) 116738-94-4, Niobium vanadium nitride ((Nb,V)N) 116738-95-5, Niobium titanium nitride ((Nb,Ti)N) 116738-96-6, Tantalum tungsten carbide (Ta0.61W0.39C) 116738-97-7, Molybdenum niobium carbide nitride (Mo0.15Nb0.85C0.15N0.85) 116738-98-8, Niobium carbide nitride (NbC0.3N0.7) 116738-99-9, Antimony indium arsenide (Sb0.32InAs0.68) 116739-00-5, Antimony indium arsenide (Sb0.39InAs0.61) 116739-01-6, Antimony indium arsenide (Sb0.46InAs0.54) 116740-05-7 116740-06-8

L3 ANSWER 31 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1987:128864 HCAPLUS
DN 106:128864
TI High temperature lamp coatings
AU Rancourt, James D.; Martin, Robert L., Jr.
CS Opt. Coat. Lab., Inc., Santa Rosa, CA, 95407, USA
SO Proc. SPIE-Int. Soc. Opt. Eng. (1986), 678(Opt. Thin Films 2: New Dev.), 185-91
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English
AB The efficacy of high efficiency lamps can be improved by recycling the unused IR energy. This is accomplished by reflecting the IR portion of the emitted energy back onto the **emitter** with a hot mirror coating on the lamp envelope. The envelopes of these lamps operate at high temps. so that special coating designs are used which function well at elevated temps. The coatings can also be used with other lamp applications, such as flashlamps and color correcting or selective lamps.
IT Electric lamps
(coatings for high temp. operation of)
IT Optical materials
(films, lamp, for high temp. operations)
IT Films
(optical, lamp, for high temp. operations)
IT 60676-86-0, Fused silica
RL: USES (Uses)
(lamp coating using substrate of, for high temp. operation)
IT **1314-61-0**
RL: PRP (Properties)
(lamp coatings from silica and, for high temp. operation)
IT 7631-86-9, Silica, uses and miscellaneous
RL: USES (Uses)
(lamp coatings from tantala, for high temp. operation)

L3 ANSWER 32 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1985:550611 HCAPLUS
DN 103:150611
TI Glow **emitters**. Compact energy source for IR radiation
AU Reinemann, Ulrich; Holzinger, Walter
CS Bayern-Chem. G.m.b.H., Ottobrunn, D-8012, Fed. Rep. Ger.
SO Int. Jahrestag. - Fraunhofer-Inst. Treib- Explosivst. (1985), 16th(Pyrotech.: Basic Princ., Technol., Appl.), 64/1-64/19
CODEN: IFTEDV; ISSN: 0722-4087
DT Journal
LA German
AB An IR glow **emitter** system for a semiautomatic flight guidance system was developed for antitank missiles HOT. The glow **emitter** element consists of thin-wall Ta pipes filled with a gasless pyrotech. heating mixt. (Pb3O4 + Si) which are localized concentrically on the perimeter of the missiles' rear tail. The pipes are heated during flight by the burning redox system and, upon reaching .apprx.1430.degree., their exothermic oxidn. by atm. O2 is initiated.
IT Guided missiles
(antitank, IR glow **emitter** for flight guidance system of)
IT Redox reaction
(of lead oxide and silicon, in pyrotech. heating mixt. for IR glow **emitter**, for antitank missile)
IT Oxidation

(of tantalum, in IR glow **emitter**, for antitank missile)
IT **1314-61-0P**
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, by oxidn. of tantalum IR glow **emitter**, for antitank missile)
IT 7440-25-7, uses and miscellaneous
RL: USES (Uses)
(in IR glow source, for antitank missile)
IT 7440-21-3, uses and miscellaneous
RL: USES (Uses)
(pyrotech. heating mixt. contg. lead oxide and, for IR glow **emitter**, for antitank missile)
IT 1314-41-6
RL: PRP (Properties)
(pyrotech. heating mixt. contg. silicon and, in IR glow **emitter**, for antitank missile)
IT 7782-44-7, reactions
RL: RCT (Reactant)
(reaction of, with tantalum, in IR glow **emitter**, for antitank missile)

L3 ANSWER 33 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1978:607816 HCAPLUS
DN 89:207816
TI Thermionic **emitters** based on rare earth element oxides and their analogs
AU Kul'varskaya, B. S.
CS USSR
SO Radiotekh. Elektron. (1978), 23(9), 1989-94
CODEN: RAELA4; ISSN: 0033-8494
DT Journal
LA Russian
AB Rare earth oxides, including their binary systems with oxides of metals of different valences, are an arsenal of new active materials for the electron sources of vacuum tubes and related devices. Figures are shown for the temp. characteristics of the emission current of Y2O3, rare earth oxides, double oxides, and systems involving Ta2O5. The dependence of band bending on donor concn. is shown.
IT Rare earth oxides
RL: USES (Uses)
(as thermionic **emitters**)
IT Electron donors
(in rare earth oxides, band bending in relation to concn. of)
IT Energy level, band structure
(of rare earth oxides, effect of donor concn. on band bending in)
IT Cathodes
(thermionic, rare earth oxides in)
IT 1306-38-3, uses and miscellaneous 1306-38-3D, solid solns. with tantalum oxide 1308-87-8 1312-81-8 1312-81-8D, solid solns. with yttrium oxide 1314-20-1D, solid solns. with praseodymium oxide 1314-23-4D, solid solns. with yttrium oxide 1314-36-9, uses and miscellaneous 1314-36-9D, solid solns. with oxides **1314-61-0** **1314-61-0D**, solid solns. with cerium oxide 12032-20-1 12036-32-7 12036-32-7D, solid solns. with thorium oxide 12036-41-8 12055-23-1D, solid solns. with yttrium oxide 12064-62-9
RL: USES (Uses)
(as thermionic **emitter**)

L3 ANSWER 34 OF 36 HCAPLUS COPYRIGHT 2002 ACS

AN 1975:50395 HCAPLUS
DN 82:50395
TI Emission constant of metallic refractory materials
AU Haufler, G.
CS Inst. Kernenerg., Univ. Stuttgart, Stuttgart, Ger.
SO Dtsch. Luft- Raumfahrt, Mitt. (1973), DLR-Mitt. 73-29, 11-23
CODEN: DLRMAT
DT Report
LA German
AB The work function (.PHI.*) and the Richardson emission const. (AR) were detd. for polycryst. sintered samples of various compns. of the systems Zr-O, Zr-B, Zr-C, Ta-O, Nb-C, Zr-Ta-C, and Zr-Nb-C. The gas pressure was <10-8 torr, and the residual gas was analyzed continuously. In the binary Zr systems, .PHI.* decreases with increasing nonmetal content in the .beta.-Zr phase up to the soly. limit, then increases in the 2-phase region, and drops rapidly in the ZrC, etc., phase. Thus, for Zr-C at 1750, .PHI.* = 4.01, 3.39, 4.15, and 2.67 eV for 0, 0.3 (soly. limit), 38 (ZrC lower limit), and 45 at. % C, resp. The total decrease in .PHI.* at the .beta.-Zr soly. limit is the same for the 3 systems. In the Nb-C system, with increasing C content, .PHI.* decreases in the Nb phase, increases in the Nb + .beta.-Nb2C region, decreases in the .beta.-Nb2C phase, increases in the .beta.-Nb2C + NbC region, and decreases in the NbC phase. The variations are smaller than those of the binary Zr systems. For any homogeneous phase of the systems studied, log AR depends linearly on .PHI.*. For a given metal, the various nonmetals yield the same AR vs. .PHI.* relation, indicating that only the metal electrons contribute to the emission. Under the same conditions, AR of Group IVB compds. is .apprxeq. 10 times that of Group VB compds. For all the systems, low .PHI.* values occur at phase limits of high nonmetal content. Esp., ZrC0.82 is a promising cathode material with .PHI.* = 2.67 eV. Oil-diffusion pumps should be avoided in contact with these cathodes, since .PHI.* is strongly changed by C contamination of the **emitter** surface.
IT Electron emission
(from refractory transition metal compds.)
IT Work function
(of transition metal refractory compds.)
IT Niobium carbide (NbC), solid solns. with zirconium carbide
Tantalum carbide, solid solns. with zirconium carbide
Zirconium carbide, solid solns. with refractory carbides
RL: PRP (Properties)
(electron emission from)
IT **1314-61-0** 12069-94-2 12741-10-5 51680-56-9 53801-45-9
RL: PRP (Properties)
(electron emission from)
IT 7440-03-1, properties 7440-25-7, properties 7440-67-7, properties
RL: PRP (Properties)
(electron emission from compns. in systems of nonmetals and)
IT 7440-42-8, properties 7440-44-0, properties 7782-44-7, properties
RL: PRP (Properties)
(electron emission from compns. in systems of transition metals and)

L3 ANSWER 35 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1973:447075 HCAPLUS
DN 79:47075
TI Bipolar transistors
PA SESCOSEM-Societe Europeenne de Semiconducteurs et de Microelectronique
SO Brit., 4 pp.
CODEN: BRXXAA

DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 1310487	A	19730321	GB 1971-11165	19710423
	FR 2085484	A1	19711224	FR 1970-15108	19700424
	FR 2085484	A5	19711224		
PRAI	FR 1970-15108		19700424		

AB A method for manuf. of bipolar transistors involving only 2 masking steps is described. Following conventional diffusion doping of Si for the base, collector, and **emitter**, contacts are applied, after removal of the dielec. layer, by 1st depositing a thermally oxidizable metal layer, e.g. Ta, Hf, or Zr, followed to deposition of a patterned layer of a metal which is insensitive to the heat treatment, e.g. Al. By positioning the Al at areas where contacts are desired, the underlying metal is not oxidized. The exposed metal is oxidized to a protective layer. Illustration in the case of Ta and Al involves oxidn. at 500.degree..

IT Transistors
(silicon bipolar, tantalum-aluminum contacts in)
IT Coating materials
(tantalum oxide, in silicon bipolar transistors)
IT Electric contacts
(tantalum-aluminum, in silicon bipolar transistors)
IT **1314-61-0**
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings, in silicon bipolar transistors)
IT 7429-90-5, uses and miscellaneous
RL: TEM (Technical or engineered material use); USES (Uses)
(elec. contact from tantalum and, in silicon bipolar transistors)
IT 7440-25-7, uses and miscellaneous
RL: TEM (Technical or engineered material use); USES (Uses)
(elec. contacts from aluminum and, in silicon bipolar transistors)

L3 ANSWER 36 OF 36 HCAPLUS COPYRIGHT 2002 ACS
AN 1972:545431 HCAPLUS
DN 77:145431
TI Metal-oxide-semiconductorfield-effect transistor
IN Croset, Michel; Nouailles, Noel
PA SESCOSEM-Societe Europeenne de Semiconducteurs et de Microelectronique
SO Ger. Offen., 10 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2101620		19720727		
PRAI	FR 1970-1565		19700116		

AB A substrate of a given cond. type is provided with **emitter** and collector regions of opposite cond. type by diffusion, and a dielec. layer as a gate region between them. The gate region consists, at least partially, of an oxide of a readily oxidizable metal and the **emitter** and collector regions are covered by metal pads. In a preferred version, the dielec. layer is Ta2O5 produced by oxidn. of a vapor-deposited Ta film in an O-contg. atm. at 500.degree. and the metal on the **emitter** and collector regions is Al. Oxide formed on the latter during heating is removed by etching. The substrate is Si. In the devices described, the dielec. layer has a high dielec. const. and good

resistance to cosmic radiation.

IT Transistors
(field-effect, silicon-tantalum oxide-aluminum film structure, radiation-resistant)

IT **1314-61-0**
RL: USES (Uses)
(transistors of silicon MOS film structure with dielec. layer of, radiation-resistant)

IT 7429-90-5, uses and miscellaneous
RL: USES (Uses)
(transistors of silicon with tantalum oxide dielec. films and collector and **emitter** regions of)

File 2:INSPEC 1969-2002/Apr W1

Set	Items	Description
S1	3811	CI=(TI SS(S) O SS) (S)NE=2
S2	259	CI=(TA SS(S) O SS) (S)NE=2
S3	7	CI=(W SS(S) SI SS(S) NI SS) (S)NE=3
S4	2	CI=(TA SS(S) AL SS(S) O SS(S) N SS) (S)NE=4
S5	54	CI=(TA SS(S) AL SS(S) O SS) (S)NE=3
S6	381	CI=(AL SS(S) O SS(S) N SS) (S)NE=3
S7	168415	PT OR PLATINUM OR AU OR GOLD
S8	75378	MOLYBDENUM OR MO OR TANTALUM OR TA
S9	110175	IRIDIUM OR IR OR RUTHENIUM OR RU
S10	75987	CHROMIUM OR CR
S11	26465	EMITTER? ? OR ECL OR (COLLECTOR(2N)ELECTRODE)
S12	441	(CATHODE (2N)LAYER) OR (FUSED(2N) ELECTROLYTE)
S13	2083	(TUNNEL?)(3N)(FILM? ? OR LAYER? OR COAT????)
S14	64303	(METAL???? OR ALLOY? OR AMALGAM? OR INGOT? OR BULLION?)(5N-)(DIELECTRIC? OR OXIDE OR FILM? ?)
S15	1463	TITANIUM(2N)MONOXIDE OR TITANIUM(2N)OXIDE
S16	0	TUNGSTEN (2N)NITRIDE(2N) SULFIDE
S17	0	ALUMINUM TANTALUM NITRIDE OXIDE
S18	9	ALUMINUM(2N)TANTALUM(2N)NITRIDE(2N)OXIDE
S19	27	ALUMINUM(2N)TANTALUM(2N)OXIDE
S20	122	ALUMINUM(2N)NITRIDE(2N)OXIDE
S21	31	TANTALUM OXIDE
S22	657	TANTALUM(2N)OXIDE
S23	24976	EMITTER? ? OR (COLLECTOR? ?(2N)ELECTRODE? ?)
S24	18	(S1 OR S15) AND S23
S25	2	(S2 OR S22) AND S23
S26	0	(S5 OR S19) AND S23
S27	1	(S6 OR S20) AND S23
S28	1895	(S7:S10) AND S23
S29	0	S28 AND S12
S30	10	S28 AND ((CATHODE)(2N)(FILM? ? OR LAYER? OR COAT????))
S31	49	S28 AND S14
S32	0	S31 AND S13
S33	4	((S1:S6) OR (S15:S22)) AND S13
S34	4	S33 NOT (S24 OR S25 OR S30)
S35	2	(S1 OR S15) AND ECL
S36	1	S35 NOT (S24 OR S25 OR S30)
S37	2	((S1:S6) OR (S15:S22)) AND ECL

24/3,AB/1
DIALOG(R)File 2:INSPEC

7230759 INSPEC Abstract Number: B2002-05-1350P-004
Title: Increased THz **emitter** efficiency by coherent superposition in a high repetition rate resonator
Author(s): Janke, C.; Bolivar, P.H.; Kurz, H.; Kunzel, H.
Author Affiliation: Inst. fur Halbeitertech. II, Rheinisch-Westfalische Tech. Hochschule, Aachen, Germany
Conference Title: Technical Digest. Summaries of papers presented at the Quantum Electronics and Laser Science Conference. Postconference Technical Digest (IEEE Cat. No.01CH37172) p.201
Publisher: Opt. Soc. America, Washington, DC, USA
Publication Date: 2001 Country of Publication: USA 283+26 postdeadline papers pp.
ISBN: 1 55752 663 X Material Identity Number: XX-2001-02286
Conference Title: Technical Digest. Summaries of papers presented at the Quantum Electronics and Laser Science Conference. Conference Edition
Conference Sponsor: APS/Div. Laser Sci.; IEEE Lasers & Electro-Opt. Soc.; OSA-Opt. Soc. America
Conference Date: 6-11 May 2001 Conference Location: Baltimore, MD, USA
Language: English
Abstract: The wide range of attractive applications of time domain THz sensing is strongly hampered by the low conversion efficiency of optically excited THz **emitters**. Conversion efficiencies for most coherent THz **emitters** are extremely low, typically on the order of 10/sup -5/. Considerable interest is therefore directed towards possible ways of increasing the THz **emitter** efficiency. We follow the approach of exposing the **emitter** to a coherent phase-matched THz background field during the emission process in order to radiate more energy before dephasing occurs, thereby amplifying the amount of coherently emitted THz radiation (Martini et al, 1998). In this presentation, we discuss recent experiments where an InGaAs surface field **emitter** is placed in a high repetition rate THz resonator. By synchronously pumping the **emitter** with a high repetition rate (1 GHz) Ti:sapphire laser source (Bartels et al, 1999), a net efficiency increase is demonstrated for the first time.
Subfile: B

24/3,AB/2
DIALOG(R)File 2:INSPEC

7230168 INSPEC Abstract Number: A2002-10-0762-004
Title: Design and performance of a THz emission and detection setup based on a semi-insulating GaAs **emitter**
Author(s): Zhao, G.; Schouten, R.N.; van der Valk, N.; Wenckebach, W.Th.; Planken, P.C.M.
Author Affiliation: Dept. of Appl. Phys., Delft Univ. of Technol., Netherlands
Journal: Review of Scientific Instruments vol.73, no.4 p.1715-19
Publisher: AIP,
Publication Date: April 2002 Country of Publication: USA
CODEN: RSINAK ISSN: 0034-6748
SICI: 0034-6748(200204)73:4L.1715:DPED;1-R
Material Identity Number: R017-2002-004

U.S. Copyright Clearance Center Code: 0034-6748/2002/73(4)/1715(5)/$19.00
Language: English

Abstract: We have built a relatively simple, highly efficient, THz emission and detection system centered around a 15 fs Ti:sapphire laser. In the system, 200 mW of laser power is focused to a 120 mu m diam spot between two silverpaint electrodes on the surface of a semi-insulating GaAs crystal, kept at a temperature near 300 K, biased with a 50 kHz, +or-400 V square wave. Using rapid delay scanning and lock-in detection at 50 kHz, we obtain probe laser quantum-noise limited signals using a standard electro-optic detection scheme with a 1-mm-thick (110) oriented ZnTe crystal or a (110) oriented 0.1-mm-thick GaP crystal. The maximum THz-induced differential signal that we observe is Delta I/I=7*10/sup -3/, corresponding to a THz peak amplitude of 95 V/cm. The THz average power was measured to be about 40 mu W, to our knowledge, the highest power reported so far generated with Ti:sapphire oscillators as a pump source. The system uses off-the-shelf electronics and requires no microfabrication techniques.

Subfile: A

24/3,AB/3
DIALOG(R)File 2:INSPEC

7204060 INSPEC Abstract Number: A2002-08-4255R-016, B2002-04-4320G-069
Title: Ti:sapphire planar waveguide coherent broadband **emitter**
Author(s): Bhutta, T.; Salathe, R.P.; Shepherd, D.P.; Eason, R.W.; Pollnau, M.
Author Affiliation: Centre of Optoelectron. Res., Southampton Univ., UK
Conference Title: Technical Digest. Summaries of papers presented at the Conference on Lasers and Electro-Optics. Postconference Technical Digest (IEEE Cat. No.01CH37170) p.581-2
Publisher: Opt. Soc. America, Washington, DC, USA
Publication Date: 2001 Country of Publication: USA 604+72 post deadline papers pp.
ISBN: 1 55752 662 1 Material Identity Number: XX-2001-01869
Conference Title: CLEO 2001. Technical Digest. Summaries of papers presented at the Conference on Lasers and Electro-Optics. Postconference Technical Digest
Conference Sponsor: IEEE/Lasers & Electro-Opt. Soc.; OSA-Opt. Soc. America; Quantum Electron. Division of the Eur. Phys. Soc.; Opt. Soc. Japanese Quantum Electron. Joint Group
Conference Date: 6-11 May 2001 Conference Location: Baltimore, MD, USA
Language: English
Abstract: Summary form only given. In recent years, broadband fiber interferometers have become very popular as basic instruments used in optical coherence tomography (OCT) for imaging applications in the biomedical field. A major challenge in the further development and applicability of OCT has been the improvement of both its spatial resolution and dynamic range. The longitudinal resolution is inversely proportional to the optical bandwidth of the light source. Broadband luminescence from transition-metal-ion doped materials, (e.g., Ti:sapphire) can significantly improve the longitudinal resolution compared to superluminescent diodes (~30 nm FWHM), but the low brightness of its luminescence is insufficient for achieving a useful dynamic range in OCT. Femtosecond lasers have, therefore, been used as large-bandwidth high-brightness light sources, and subcellular imaging has recently been demonstrated in this way. However, current femtosecond light sources do not necessarily meet the requirements of compactness, ease of use, and low

cost. We present a simple broadband light source based on a Ti:sapphire planar waveguide. It operates in a wavelength region near 800 nm, applicable to the investigation of biotissue and detectable with simple silicon diodes, with a bandwidth comparable to that of a femtosecond light source.
Subfile: A B

24/3,AB/4
DIALOG(R)File 2:INSPEC

7184681 INSPEC Abstract Number: A2002-07-8160C-001, B2002-03-2550E-080
Title: Enhancing the surface passivation of TiO/sub 2/ coated silicon wafers
Author(s): Richards, B.S.; Cotter, J.E.; Honsberg, C.B.
Author Affiliation: Centre for Photovoltaic Eng., New South Wales Univ., Sydney, NSW, Australia
Journal: Applied Physics Letters vol.80, no.7 p.1123-5
Publisher: AIP,
Publication Date: 18 Feb. 2002 Country of Publication: USA
CODEN: APPLAB ISSN: 0003-6951
SICI: 0003-6951(20020218)80:7L.1123:ESPT;1-9
Material Identity Number: A135-2002-007
U.S. Copyright Clearance Center Code: 0003-6951/2002/80(7)/1123(3)/$19.00
Language: English
Abstract: In this letter, we demonstrate good surface passivation of lightly diffused n-type solar cell **emitters** using titanium dioxide (TiO/sub 2/) thin films treated with a furnace oxidation process. Transient-photoconductance decay, X-ray photoelectron spectroscopy, and scanning electron microscopy measurements indicate that the silicon dioxide layer formed at the TiO/sub 2/:Si interface provides excellent surface passivation. **Emitter** dark saturation current densities of 4.7*10/sup -14/ A/cm/sup 2/ are achieved by this method, demonstrating that TiO/sub 2/ films are compatible with high-efficiency solar cell structures.
Subfile: A B

24/3,AB/5
DIALOG(R)File 2:INSPEC

6865664 INSPEC Abstract Number: A2001-08-4280A-002, B2001-04-4320M-002
Title: Bulk InAs mirror as a THz-radiation intra-cavity **emitter** in a femtosecond mode-locked Ti:sapphire laser
Author(s): Zhenlin Liu; Ono, S.; Ohtake, H.; Sarukura, N.; Tze-An Liu; Huang, K.F.; Ci-Ling Pan
Author Affiliation: Inst. for Molec. Sci., Okazaki, Japan
Conference Title: OSA Trends in Optics and Photonics. Advanced Solid State Lasers. Vol.34. Proceedings p.612-15
Editor(s): Injeyan, H.; Keller, U.; Marshall, C.
Publisher: Opt. Soc. America, Washington, DC, USA
Publication Date: 2000 Country of Publication: USA xvi+666 pp.
ISBN: 1 55752 628 1 Material Identity Number: XX-2000-00324
Conference Title: Proceedings of Topical Meeting on Advanced Solid-State Laser (ASSL 2000)
Conference Sponsor: Opt. Soc. America; IEEE/Lasers & Electro-Opt. Soc.;

Eur. Phys. Soc
Conference Date: 13-16 Feb. 2000 Conference Location: Davos, Switzerland
Language: English
Abstract: THz radiation is generated from bulk InAs shallow-incidence-angle mirror inside the cavity of a mode-locked Ti:sapphire laser. The magnetic field is also applied for radiation enhancement.
Subfile: A B

? T S24/3,AB/6-18

24/3,AB/6
DIALOG(R)File 2:INSPEC

6763314 INSPEC Abstract Number: A2000-24-4260F-024, B2000-12-4330B-059
Title: High-average-power, high-repetition-rate, femtosecond Ti:sapphire lasers with intra-cavity and extra-cavity CW-amplification schemes
Author(s): Liu, Z.; Murakami, H.; Kozeki, T.; Ono, S.; Ohtake, H.; Sarukura, N.
Author Affiliation: Inst. for Molecular Sci., Okazaki, Japan
Conference Title: Nonlinear Optics: Materials, Fundamentals, and Applications. Technical Digest. Postconference Edition. TOPS Vol.46 (IEEE Cat. No.00CH37174) p.295-7
Publisher: Opt. Soc. America, Washington, DC, USA
Publication Date: 2000 Country of Publication: USA xx+422 pp.
ISBN: 1 55752 646 X Material Identity Number: XX-2000-02452
Conference Title: Nonlinear Optics: Materials, Fundamentals, and Applications. Technical Digest. TOPS Vol.46
Conference Sponsor: Opt. Soc. America; IEEE/Lasers & Electro-Opt. Soc
Conference Date: 6-10 Aug. 2000 Conference Location: Kaua'i-Lihue, HI, USA
Language: English
Abstract: We have demonstrated high-average-power, high-repetition-rate, femtosecond Ti:sapphire lasers with newly-invented intra-cavity or extra-cavity CW-amplification schemes. The maximum output powers reach 3.4 W and 5.8 W, respectively. Such high average power and high repetition-rate femtosecond optical pulses will open up new application possibilities including parametric frequency conversion, THz-**emitter** driver, and material processing. This cw-amplification scheme will be also widely applicable to other low-gain and laser-pumped gain media.
Subfile: A B

24/3,AB/7
DIALOG(R)File 2:INSPEC

6584429 INSPEC Abstract Number: B2000-06-1350P-018
Title: Efficient terahertz radiation generation from a bulk InAs mirror as an intracavity terahertz radiation **emitter**
Author(s): Zhenlin Liu; Ono, S.; Ohtake, H.; Sarukura, N.; Tze-An Liu; Kai-Fung Huang; Ci-Ling Pan
Author Affiliation: Inst. for Molecular Sci., Okazaki, Japan
Journal: Japanese Journal of Applied Physics, Part 2 (Letters) vol.39, no.4B p.L366-7
Publisher: Publication Office, Japanese Journal Appl. Phys,

Publication Date: 15 April 2000 Country of Publication: Japan
CODEN: JAPLD8 ISSN: 0021-4922
SICI: 0021-4922(20000415)39:4BL.1366:ETRG;1-P
Material Identity Number: C580-2000-008
Language: English
Abstract: Terahertz (THz) radiation is generated efficiently from a bulk InAs mirror with a shallow incidence angle inside the cavity of a femtosecond, mode-locked Ti:sapphire laser self-started by a strained saturable Bragg reflector. A magnetic field is also applied to the InAs mirror to enhance THz radiation.
Subfile: B

24/3,AB/8
DIALOG(R)File 2:INSPEC

6500197 INSPEC Abstract Number: B2000-03-4330B-046
Title: High precision multi-pass synchronously delay triggering control system
Author(s): Guo Liang-Fu; Zhang Xhu-Kui; Wang Xiao-Dong; Tang Jun; Zeng Xiao-Ming; Huang Xiao-Jun
Author Affiliation: Lab. for Laser Fusion, CAEP, Minyang, China
Journal: High Power Laser and Particle Beams vol.11, no.6 p.715-19
Publisher: Nucl. Soc. China,
Publication Date: 15 Dec. 1999 Country of Publication: China
CODEN: QYLIEL ISSN: 1001-4322
SICI: 1001-4322(19991215)11:6L.715:HPMP;1-V
Material Identity Number: D415-2000-001
Language: Chinese
Abstract: Precision synchronization of a high brightness facility is obtained and a delay triggering control signal is produced with wide range (1 ns~999 mu s) high precision (1 ns) adjustment and multi-pass output (20 passes) through the use of high performance fast-ECL circuit, standard frequency counting method and high precision linear saw tooth wave voltage generator.
Subfile: B

24/3,AB/9
DIALOG(R)File 2:INSPEC

6423978 INSPEC Abstract Number: A2000-02-4255R-003, B2000-01-4320G-026
Title: Tunable two-pulse narrow-band laser **emitter** for lidar systems
Author(s): Korolev, V.I.; Mesnyankin, E.P.
Author Affiliation: Sci.-Res. Inst. for Comprehensive Tests on Opto-Electron. Instrum. & Syst., Vavilov (S.I.) State Opt. Inst., St. Petersburg, Russia
Journal: Kvantovaya Elektronika, Moskva vol.28, no.3 p.232-6
Publisher: Turpion Ltd.; Kvantovaya Elektronika,
Publication Date: Sept. 1999 Country of Publication: Russia
CODEN: KVEKA3 ISSN: 0368-7147
SICI: 0368-7147(199909)28:3L.232;1-B
Material Identity Number: C314-1999-012
Translated in: Quantum Electronics vol.29, no.9 p.787-91
Publication Date: Sept. 1999 Country of Publication: UK

CODEN: QUELEZ ISSN: 1063-7818
SICI of Translation: 1063-7818(199909)29:9L.787:TPNB;1-K
Language: English
Abstract: One of the ways of constructing a two-pulse laser **emitter** with a narrow spectral line, tunable over a wide wavelength range and based on a Ti:sapphire active medium, was investigated. This medium was excited by pulsed second-harmonic radiation of a neodymium glass laser. The parameters of the laser components were determined. These make it possible to construct a two-pulse source of radiation with a line width of Delta h<or=0.01 AA in each pulse, tunable in the range 670-1010 nm, and providing means for varying the spectral spacing between the pulses. The amplification of tunable laser radiation was investigated in a single- and four-pass Ti:sapphire amplifier with an axially excited active element 20 mm long.
Subfile: A B

24/3,AB/10
DIALOG(R)File 2:INSPEC

6042464 INSPEC Abstract Number: A9822-7660-002
Title: FT-NMR detection of /sup 45/Sc,/sup 49/Ti and /sup 93/Nb in TiO/sub 2/ single crystal
Author(s): Sato, K.; Takeda, S.; Fukuda, S.; Minamisono, T.; Tanigaki, M.; Miyake, T.; Maruyama, Y.; Matsuta, K.; Fukuda, M.; Nojiri, Y.
Author Affiliation: Dept. of Phys., Osaka Univ., Toyonaka, Japan
Journal: Zeitschrift fur Naturforschung, Teil A (Physik, Physikalische Chemie, Kosmophysik) Conference Title: Z. Nat.forsch. A, Phys. Phys. Chem. Kosmophys. (Germany) vol.53A, no.6-7 p.549-51
Publisher: Verlag der Zeitschrift fur Naturforschung,
Publication Date: June-July 1998 Country of Publication: Germany
CODEN: ZNASEI ISSN: 0932-0784
SICI: 0932-0784(199806/07)53A:6/7L.549:D449;1-O
Material Identity Number: E952-98007
Conference Title: XIVth International Symposium on Nuclear Quadrupole Interactions
Conference Date: 20-25 July 1997 Conference Location: Pisa, Italy
Language: English
Abstract: In order to determine the electric quadrupole moment of the short-lived beta -**emitter** /sup 41/Sc from the quadrupole coupling constant in TiO/sub 2/, we measured the field gradient by detecting the Fourier-Transformed-NMR of stable isotope /sup 45/Sc doped in TiO/sub 2/. Also, in order to study the electronic structure of impurities systematically, EFGs were measured for /sup 45/Sc, /sup 49/Ti and /sup 93/Nb in a TiO/sub 2/ single crystal.
Subfile: A

24/3,AB/11
DIALOG(R)File 2:INSPEC

6042425 INSPEC Abstract Number: A9822-7660G-003
Title: Electric quadrupole interactions of the short-lived beta -**emitter** /sup 12/N in insulator crystals (/sup 12/N implanted in single crystal TiO/sub 2/)

Author(s): Minamisono, T.; Sato, K.; Akai, H.; Takeda, S.; Maruyama, Y.; Matsuta, K.; Fukuda, M.; Miyake, T.; Morishita, A.; Izumikawa, T.; Nojiri, Y.
Author Affiliation: Dept. of Phys., Osaka Univ., Toyonaka, Japan
Journal: Zeitschrift fur Naturforschung, Teil A (Physik, Physikalische Chemie, Kosmophysik) Conference Title: Z. Nat.forsch. A, Phys. Phys. Chem. Kosmophys. (Germany) vol.53A, no.6-7 p.293-300
Publisher: Verlag der Zeitschrift fur Naturforschung,
Publication Date: June-July 1998 Country of Publication: Germany
CODEN: ZNASEI ISSN: 0932-0784
SICI: 0932-0784(199806/07)53A:6/7L.293:EQIS;1-Y
Material Identity Number: E952-98007
Conference Title: XIVth International Symposium on Nuclear Quadrupole Interactions
Conference Date: 20-25 July 1997 Conference Location: Pisa, Italy
Language: English
Abstract: The electronic structure of nitrogen atoms as impurities in an ionic TiO/sub 2/ crystal has been investigated by analyzing electric field gradients (EFGs) measured by use of short-lived beta -emitting /sup 12/N implanted following nuclear reactions. Conventional beta -NMR and its modification, suitable for the detection of quadrupole effects in the NMR spectra, were used for the investigation of hyperfine interactions of /sup 12/N located in substitutional sites of O atoms and interstitial sites in the crystal. In order to deduce absolute values of the EFGs from the obtained eqQ/h, the quadrupole moment of /sup 12/N has been determined from the NMR detection of /sup 12/N implanted in BN(hexagonal) crystal. Here the EFG at the N atom in BN was measured by detecting the FT-NMR of /sup 14/N in the crystal. The EFGs in TiO/sub 2/ are compared with the theoretical predictions based on the ab initio band-structure calculation in the framework of the KKR method.
Subfile: A

24/3,AB/12
DIALOG(R)File 2:INSPEC

5996572 INSPEC Abstract Number: A9818-4250-037, B9809-4340-128
Title: Intracavity self-induced transparency of a multilevel absorber
Author(s): Muller, M.; Kalosha, V.P.; Herrmann, J.
Author Affiliation: Max Born Inst. fur Nichtlineare Opt. und Kurzzeitspektroskopie, Berlin, Germany
Journal: Physical Review A (Atomic, Molecular, and Optical Physics) vol.58, no.2 p.1372-81
Publisher: APS through AIP,
Publication Date: Aug. 1998 Country of Publication: USA
CODEN: PLRAAN ISSN: 1050-2947
SICI: 1050-2947(199808)58:2L.1372:ISIT;1-G
Material Identity Number: N687-98008
U.S. Copyright Clearance Center Code: 1050-2947/98/58(2)/1372(10)/$15.00
Language: English
Abstract: Intracavity self-induced transparency of a three-level absorber is studied in the scope of solid-state laser generation of an ultrabroadband electromagnetic pulse that drives the population of all absorber levels through complete Rabi flopping. We show that at sufficient pump rates a Ti:sapphire laser forces an intracavity GaAs single quantum-well absorber, which provides an inter-valence-band transition in the THz domain in addition to two direct optical interband transitions,

into the self-induced transparency regime and acts as an all-solid-state ultrabroadband pulse **emitter** . In dependence on the resonator bandwidth, the intracavity pulse energy and the absorber dipole moments we obtain a multilevel self-induced transparency pulse spectrum which extends from the THz domain up to the ultraviolet. The steady-state sub-10-fs pulse consists of only a few optical cycles with the high-frequency components at its leading edge and a single to subcyclic THz component at its trailing edge.
Subfile: A B

24/3,AB/13
DIALOG(R)File 2:INSPEC

5717933 INSPEC Abstract Number: A9722-7860F-002, B9711-4220-021
Title: Film electroluminescent **emitters** on rough substrates
Author(s): Gurin, N.T.; Sabitov, O.Yu.; Brigadnov, I.Yu.
Author Affiliation: Moscow State Univ., Ul'yanovsk, Russia
Journal: Pis'ma v Zhurnal Tekhnicheskoi Fizika vol.23, no.15-16 p. 7-12
Publisher: AIP,
Publication Date: Aug. 1997 Country of Publication: Russia
CODEN: PZTFDD ISSN: 0320-0108
SICI: 0320-0108(199708)23:15/16L.7;1-B
Material Identity Number: B283-97009
Translated in: Technical Physics Letters vol.23, no.8 p.577-9
Publication Date: Aug. 1997 Country of Publication: USA
CODEN: TPLEED ISSN: 1063-7850
SICI of Translation: 1063-7850(199708)23:8L.577:FEER;1-T
U.S. Copyright Clearance Center Code: 1063-7850/97/080577-3$10.00
Language: English
Abstract: The authors present investigations of metal/semiconductor/compo site-liquid insulator/metal (MSCM) electroluminescent structures deposited on ordinary smooth and rough glass substrates. M is the first transmitting SnO/sub 2/ electrode with a second clamped metal electrode with micrometer-regulated movement; S is a ZnS:Mn electroluminescent layer, and C is a layer of composite liquid insulator consisting of a mixture of PFMS-4 silicon-organic liquid and a barium titanate BaTiO/sub 3/ powder filler.
Subfile: A B

24/3,AB/14
DIALOG(R)File 2:INSPEC

5596492 INSPEC Abstract Number: B9707-3240C-006
Title: Dielectric-base transistors with doped channel
Author(s): Hato, T.; Yoshida, A.; Yoshida, C.; Suzuki, H.; Yokoyama, N.
Author Affiliation: Fujitsu Labs. Ltd., Atsugi, Japan
Journal: Applied Physics Letters vol.70, no.21 p.2900-2
Publisher: AIP,
Publication Date: 26 May 1997 Country of Publication: USA
CODEN: APPLAB ISSN: 0003-6951
SICI: 0003-6951(19970526)70:21L.2900:DBTW;1-Y
Material Identity Number: A135-97023

U.S. Copyright Clearance Center Code: 0003-6951/97/70(21)/2900/3/$10.00
Language: English
Abstract: The dielectric-base transistor (DBT) is expected to be coupled with various functional oxides such as high-temperature superconductors and ferroelectrics. We experimented with lowering the conduction band of the channel to reduce the operating voltage. LaTiO/sub 3/ deposited on SrTiO/sub 3/ supplies carriers in the SrTiO/sub 3/ substrate by displacing Sr/sup 2+/ and La/sup 3+/. With this technique, we fabricated a YBa/sub 2/Cu/sub 3/O/sub 7-x//In/sub 2/O/sub 3//SrTiO/sub 3//LaTiO/sub 3//SrTiO/sub 3/ transistor with a partially doped channel. The transistor operates at under 1 V while maintaining a voltage amplification factor of 2, which is one order smaller than the 15 V operating voltage of a transistor with an undoped channel. The base potential relative to the **emitter** conduction band has been reduced to 0.3 eV.
Subfile: B

24/3,AB/15
DIALOG(R)File 2:INSPEC

5587261 INSPEC Abstract Number: B9707-3240C-001
Title: Electrical properties of Al/Al/sub 2/O/sub 3//(Ba,Rb)BiO/sub 3//SrTiO/sub 3/(Nb) three terminal device
Author(s): Toda, F.; Yamada, T.; Hashimoto, K.; Abe, H.
Author Affiliation: Res. Lab., Oki Electr. Ind. Co. Ltd., Tokyo, Japan
Journal: Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) Conference Title: Jpn. J. Appl. Phys. 1, Regul. Pap. Short Notes Rev. Pap. (Japan) vol.36, no.3B p.1990-3
Publisher: Publication Office, Japanese Journal Appl. Phys,
Publication Date: March 1997 Country of Publication: Japan
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(199703)36:3BL.1990:EPAB;1-W
Material Identity Number: F221-97007
Conference Title: 1996 International Conference on Solid State Devices and Materials (SSDM'96)
Conference Date: 26-29 Aug. 1996 Conference Location: Yokohama, Japan
Language: English
Abstract: A three terminal device with the Al/Al/sub 2/O/sub 3//(Ba,Rb)BiO/sub 3//Nb-doped SrTiO/sub 3/ structure was fabricated using a superconducting base layer. The stable interface between (Ba,Rb)BiO/sub 3/ and the artificial oxide barrier was obtained using in situ Al/sub 2/O/sub 3/ deposition. The output characteristics were measured as functions of input current. A current gain greater than 2 was obtained in the common **emitter** configuration.
Subfile: B

24/3,AB/16
DIALOG(R)File 2:INSPEC

5324977 INSPEC Abstract Number: A9617-7920H-001, B9609-2320-001
Title: Energy spectra of electrons emitted from samples with an internal electric field
Author(s): Olesik, J.; Calusinski, B.; Olesik, Z.
Author Affiliation: Inst. of Phys., Pedagogical Univ., Czestochowa,

Poland
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.2638 p.94-102
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1995 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1995)2638L.94:ESEE;1-Z
Material Identity Number: C574-95263
U.S. Copyright Clearance Center Code: 0 8194 2004 2/95/$6.00
Conference Title: Optical Characterization Techniques for High-Performance Microelectronic Device Manufacturing II
Conference Sponsor: SPIE
Conference Date: 25-26 Oct. 1995 Conference Location: Austin, TX, USA
Language: English
Abstract: This work is concerned with electron emission induced by an electric field and photoemission assisted by the field. The applied samples were **emitters** in the shape of semiconducting films evaporated on both sides of a glass substrate of thickness 0.2 mm. One side was an emitting surface whereas the other was a field electrode. The field electrode was supplied by a negative polarizing voltage U/sub pol/. The emitting materials were In/sub 2/O/sub 3/:Sn and titanium films. As a result of applying U/sub pol/ and illumination, electrons and photoelectrons are released and enter the electron multiplier. Amplitude spectra of pulses were recorded by a multichannel pulse voltage analyser. Energy analysis of electrons released from the samples was performed by the retarding field method. Amplitude spectra at a given U/sub pol/ and changing retarding field for **titanium** and **oxide** layers were compared. It was found that electron energy can exceed even 50 eV. For both types of films the influence of the illumination on the electron emission induced by an electric field was also investigated.
Subfile: A B

24/3,AB/17
DIALOG(R)File 2:INSPEC

5172457 INSPEC Abstract Number: B9603-3240C-010
Title: Improved **emitter** -base junction with In/sub 2/O/sub 3/ in dielectric-base transistor
Author(s): Hato, T.; Takauchi, H.; Yoshida, A.; Tamura, H.; Fujimaki, N.; Oshima, Y.; Yokoyama, N.
Author Affiliation: Deposit Process Dev. Div., Fujitsu Labs. Ltd., Atsugi, Japan
Journal: Japanese Journal of Applied Physics, Part 1 (Regular Papers & Short Notes) vol.34, no.12A p.6379-81
Publisher: Publication Office, Japanese Journal Appl. Phys,
Publication Date: Dec. 1995 Country of Publication: Japan
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(199512)34:12AL.6379:IEBJ;1-F
Material Identity Number: C579-96001
Language: English
Abstract: We studied In/sub 2/O/sub 3/ for use as an intermediate layer between the YBCO **emitter** electrode and the SrTiO/sub 3/ base region of dielectric-base transistors (DBT). We fabricated and tested a YBCO(001)/In/sub 2/O/sub 3/(100)/SrTiO/sub 3/(110) heterostructure by using a laser-ablation deposition technique with high-density targets. Our

YBCO/In/sub 2/O/sub 3//n-SrTiO/sub 3/ diode structure showed a current density that was one order of magnitude larger than with an MgO intermediate layer.
Subfile: B

24/3,AB/18
DIALOG(R)File 2:INSPEC

4734693 INSPEC Abstract Number: B9409-3240C-028
Title: Increasing the current density of dielectric-base transistors with an MgO **emitter**-base barrier
Author(s): Yoshida, A.; Tamura, H.; Takauchi, H.; Hato, T.; Yokoyama, N.
Author Affiliation: Fujitsu Labs. Ltd., Atsugi, Japan
Journal: IEEE Transactions on Applied Superconductivity vol.4, no.2 p.76-80
Publication Date: June 1994 Country of Publication: USA
CODEN: ITASE9 ISSN: 1051-8223
U.S. Copyright Clearance Center Code: 1051-8223/94/$04.00
Language: English
Abstract: We measured the current-voltage characteristics of YBa/sub 2/Cu/sub 3/O/sub 7-x//oxide/n-SrTiO/sub 3/ diodes using NdGaO/sub 3/, LaAlO/sub 3/, CeO/sub 2/, and MgO as the oxide. MgO films had the highest current density. We then fabricated dielectric-base transistors with a YBa/sub 2/Cu/sub 3/O/sub 7-x/(YBCO) **emitter**/collector on a SrTiO/sub 3/ dielectric base with an MgO barrier. The transistors had both voltage and current gains exceeding unity at 4.2 K. The **emitter** current density was about 4*10/sup 3/ A/cm/sup 2/ at a collector-**emitter** voltage of 10 V and base-**emitter** voltage 10 V; this is 2 to 3 orders of magnitude larger than that of transistors with NdGaO/sub 3/ **emitter**-base barrier. We obtained a transconductance of around 0.4 mS at a collector-**emitter** voltage of 10 V for a device with a 6- mu m-diameter **emitter**.
Subfile: B

25/3,AB/1
DIALOG(R)File 2:INSPEC

01821552 INSPEC Abstract Number: A82027668, B82018560
Title: Advances in high output voltage silicon solar cells
Author(s): Arndt, R.A.; Meulenberg, A.; Allison, J.F.; Weizer, V.G.
Author Affiliation: COMSAT Labs., Clarksburg, MD, USA
Conference Title: Fifteenth IEEE Photovoltaic Specialists Conference - 1981 p.92-6
Publisher: IEEE, New York, NY, USA
Publication Date: 1981 Country of Publication: USA 1471 pp.
Conference Date: 12-15 May 1981 Conference Location: Kissimmee, FL, USA
Language: English
Abstract: Solar cells have been fabricated from 0.1 Omega -cm, p-type silicon by a two-step diffusion process of **emitter** formation. The cells are 200 mu m thick and 2*2 cm in area with a planar front surface that has an anti-reflection (AR) coating of **tantalum oxide**. Cr-Au-Ag contact metallization is on both sides of the cell. On the back, the Cr-Au-Ag is applied over an aluminum diffused layer, and on the front, it is applied through small holes in the AR coating. The best of these cells has exhibited an open-circuit voltage of 654 mV under AMO illumination.
Subfile: A B

30/3,AB/1
DIALOG(R)File 2:INSPEC

6949961 INSPEC Abstract Number: A2001-14-7970-004, B2001-07-2320-011
Title: Electron field emission characterization of nanocrystalline diamond thin **film** cold **cathode** devices
Author(s): Weiss, B.L.; Badzian, A.; Pilione, L.; Badzian, T.; Drawl, W.; Morell, G.
Author Affiliation: Mater. Res. Lab., Pennsylvania State Univ., University Park, PA, USA
Conference Title: Amorphous and Nanostructured Carbon. Symposium (Materials Research Society Symposium Proceedings Vol.593) p.227-31
Editor(s): Sullivan, J.P.; Robertson, J.; Zhou, O.; Allen, T.B.; Coll, B.F.
Publisher: Mater. Res. Soc, Warrendale, PA, USA
Publication Date: 2000 Country of Publication: USA xvii+565 pp.
ISBN: 1 55899 501 3 Material Identity Number: XX-2000-02001
Conference Title: Amorphous and Nanostructured Carbon. Symposium
Conference Date: 29 Nov.-2 Dec. 1999 Conference Location: Boston, MA, USA
Language: English
Abstract: Electron field emission measurements have been performed on thin **film** cold **cathode** materials grown, on **molybdenum**, by a modified MPACVD diamond process. Specifically the modification is due to the addition of nitrogen and oxygen, in varying ratios, during the diamond growth phase. Characterization using Raman spectroscopy shows features at 1190, 1330 and 1550 cm/sup -1/. A simple triode device was fabricated for electron emission characterization. KAPTON(R) film is used as the insulating layer and a **Mo** mesh is used as the extraction gate **electrode**. The **collector** is an indium tin oxide (ITO) coated glass plate which is positively biased with respect to the gate electrode. Field emission characteristics have shown current measurements of greater than 1 microamp for fields of 40 V/micron. Gate currents are typically 1000 times greater than the emitted current. Issues currently being addressed include improvement in the total emitted current, current stability and device failure. We also present field emission measurements on diamond films grown by HFCVD.
Subfile: A B

30/3,AB/2
DIALOG(R)File 2:INSPEC

6221394 INSPEC Abstract Number: A1999-10-7970-021, B1999-05-2320-033
Title: Planar field **emitters** fabricated by sulfur-doped boron nitride
Author(s): Yokota, Y.; Tagawa, S.; Sugino, T.
Author Affiliation: Dept. of Electr. Eng., Osaka Univ., Japan
Journal: Journal of Vacuum Science & Technology B (Microelectronics and Nanometer Structures) Conference Title: J. Vac. Sci. Technol. B, Microelectron. Nanometer Struct. (USA) vol.17, no.2 p.642-6
Publisher: AIP for American Vacuum Soc,
Publication Date: March 1999 Country of Publication: USA
CODEN: JVTBD9 ISSN: 0734-211X
SICI: 0734-211X(199903)17:2L.642:PFEF;1-K

Material Identity Number: C067-1999-002
U.S. Copyright Clearance Center Code: 0734-211X/99/17(2)/642(5)/$15.00
Conference Title: Fourth International Plasma-Based Ion Implantation Workshop
Conference Date: 2-4 June 1998 Conference Location: Dearborn, MI,USA
Language: English
Abstract: Boron nitride (BN) films are grown on sapphire substrates by plasma-assisted chemical vapor deposition. BN films are doped with sulfur (S). The electrical resistivity of the S-doped BN film is reduced to 10/sup 3/ Omega cm, while the electrical resistivity of the undoped BN film is 10/sup 11/ Omega cm. It is demonstrated that the negative electron affinity appears on the BN surface. Insertion of a GaN layer between the BN film and sapphire leads to a tight adhesion of the BN **film**. **Cathode** and anode electrons are formed on the BN film and the sapphire substrate, respectively, by evaporating Ti and **Au**. An emission current of 1 mu A is obtained at an electric-field strength of 16 V/ mu m for the planar field **emitter**. An emission current density as high as 0.1 A/cm/sup 2/ is detected. It is expected that the planar field **emitters** can be operated at several tens V with a decreased cathode-anode spacing and that the present field **emitter** structure is applicable to a field-emission panel display.
Subfile: A B

30/3,AB/3
DIALOG(R)File 2:INSPEC

5960787 INSPEC Abstract Number: A9816-7970-001, B9808-2320-009
Title: Hafnium carbide films and film-coated field emission cathodes
Author(s): Mackie, W.A.; Tianbao Xie; Blackwood, J.E.; Williams, S.C.; Davis, P.R.
Author Affiliation: Linfield Res. Inst., McMinnville, OR, USA
Journal: Journal of Vacuum Science & Technology B (Microelectronics and Nanometer Structures) vol.16, no.3 p.1215-18
Publisher: AIP for American Vacuum Soc,
Publication Date: May-June 1998 Country of Publication: USA
CODEN: JVTBD9 ISSN: 0734-211X
SICI: 0734-211X(199805/06)16:3L.1215:HCFF;1-W
Material Identity Number: C067-98003
U.S. Copyright Clearance Center Code: 0734-211X/98/16(3)/1215(4)/$15.00
Language: English
Abstract: We have previously reported on field emission improvements in turn-on voltages and emission stability using ZrC films as coatings on Si and **Mo** single **emitters** and **emitter** arrays. However, during our emission studies of bulk carbides, HfC was found to be slightly superior. We now report on work in progress investigating HfC films and HfC film coated field emission cathodes. Uses for arrays of these field emission cathodes range from video displays to microwave applications. This article deals with physical vapor deposition of HfC, absolute work function measurements, and electron emission properties of these film surfaces. This work demonstrates improvements by using HfC films over films of ZrC and an associated surface work function lowering of more than 1 eV in some instances compared to the clean surface.
Subfile: A B

30/3,AB/4
DIALOG(R)File 2:INSPEC

5851482 INSPEC Abstract Number: A9808-7970-001, B9804-2320-008
Title: Field electron emission from highly graphitic diamond films
Author(s): Binglin Zhang; Ning Yao; Yunjun Li; Jintian He; Xiaoping Wang
Author Affiliation: Dept. of Phys., Zhengzhou Univ., Henan, China
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3184 p.225-8
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1997 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1997)3184L.225:FEEF;1-7
Material Identity Number: C574-97226
U.S. Copyright Clearance Center Code: 0277-786X/97/$10.00
Conference Title: Microelectronic Packaging and Laser Processing
Conference Sponsor: SPIE; SPIE Singapore Chapter; Inst. Phys. Singapore; et al
Conference Date: 25-26 June 1997 Conference Location: Singapore
Language: English
Abstract: The diamond films were prepared by a microwave chemical vapor deposition system. **Molybdenum** substrates were used. The X-ray diffraction (XRD) spectra of the films contain peaks of the (111) and (220) facets of diamond. Scanning electron microscope (SEM) and optical micrograph reveal that the films consist of ball-like carbon structure, and diamond grains embedded on the balls. Raman spectra and surface resistance measurement also indicate that the films are highly graphitic diamond films. The field **emitter** was made of the diamond-ball like carbon **film cathode** and ITO anode. The transparent conducting anode technique was used to measure the I-V curves and the emission sites. The measurements were operated in a vacuum system with a base pressure of 10/sup -4/ torr. The turn-on field of 10 V/ mu m was obtained. After Ar/sup +/ ion impacting the highly graphitic diamond **film cathode**, the turn-on field was increased dramatically to 22 V/ mu m. A good quality diamond film **emitter** was also reported.
Subfile: A B

30/3,AB/5
DIALOG(R)File 2:INSPEC

03868344 INSPEC Abstract Number: B91030912
Title: **Ir-coated** dispenser **cathode** for CRT
Author(s): Kimura, S.; Yakabe, T.; Matsumoto, S.; Miyazaki, D.; Yoshii, T.; Fujiwara, M.; Koshigoe, S.
Author Affiliation: Toshiba Corp., Kawasaki, Japan
Journal: IEEE Transactions on Electron Devices vol.37, no.12, pt.2 p.2564-7
Publication Date: Dec. 1990 Country of Publication: USA
CODEN: IETDAI ISSN: 0018-9383
U.S. Copyright Clearance Center Code: 0018-9383/90/1200-2564$01.00
Language: English
Abstract: A compact dispenser cathode has been developed for application to cathode ray tubes (CRTs). A cathode **emitter**, comprising BaO, CaO, and Al/sub 2/O/sub 3/ in a molar ratio of 4:1:1, was impregnated into a

porous tungsten pellet. An intermetallic compound of tungsten and **iridium** was formed on the cathode pellet. Heater ratings were 6.3 V*0.2 A. Emission characteristics were measured by using color CRTs. As a result, a cathode peak loading of 15 A/cm/sup 2/ was ensured in the space-charge region. Furthermore, life tests with a peak loading of 7.5 A/cm/sup 2/ were conducted over 10000 h. The decrease in emission current after 10000 h was within only 10% of the initial value. Reliability of cathode performance was assured in terms of breakdown potential between the heater and the cathode, emission characteristics, life performance, grid emission, and the drift in cutoff potential. In addition, the effects of the coating thickness on the emission characteristics are discussed.
Subfile: B

30/3,AB/6
DIALOG(R)File 2:INSPEC

02768463 INSPEC Abstract Number: A86126838, B86067620
Title: A study of surface damage in composite cathode materials in fast-flow CO/sub 2/ laser
Author(s): Gnesin, G.G.; Levchenko, G.V.; Luban, R.B.; Barsuk, V.A.; Nesterenko, V.M.; Filimonov, M.Z.
Author Affiliation: Inst. of Problems of Mater. Sci., Acad. of Sci., Kiev, Ukrainian SSR, USSR
Journal: Poverkhnost'. Fizika, Khimiya, Mekhanika
Publication Date: 1984 Country of Publication: USSR
CODEN: PFKMDJ ISSN: 0207-3528
Translated in: Physics, Chemistry and Mechanics of Surfaces vol.3, no.7 p.2110-24
Publication Date: 1985 Country of Publication: UK
CODEN: PCMSER ISSN: 0734-1520
U.S. Copyright Clearance Center Code: 0734-1520/85/0307-2110$20.00/0
Language: English
Abstract: Tests were carried out of a fast-flow electric-discharge CO/sub 2/ laser with a cathode unit containing electrode elements whose **emitters** are made of W/Cu- or **Mo** /Cu-based materials with LaB/sub 6/ inclusions. These materials were found to ensure a uniform discharge over the entire surface of the cathode unit. The **cathode** elements became **coated** with films formed by the **emitter** erosion and corrosion products. The density, thickness, and composition of these films varied depending on the composition of the **emitter** material. No short-circuiting of the electrode elements by the films occurred. The material containing 50% **Mo** , Cu, and inclusions of LaB/sub 6/ was the best and can be recommended for use as the **emitter** material in the cathode elements of fast-flow electric-discharge CO/sub 2/ lasers.
Subfile: A B

30/3,AB/7
DIALOG(R)File 2:INSPEC

01315046 INSPEC Abstract Number: A79019675, B79012541
Title: A uniformly emitting MIM thin **film cathode** with evaporated insulator
Author(s): Nisch, W.; Jonsson, C.
Author Affiliation: Inst. fur Angewandte Phys., Univ. Tubingen, Tubingen,

West Germany
Journal: Optik vol.52, no.3 p.247-52
Publication Date: 1978 Country of Publication: West Germany
CODEN: OTIKAJ ISSN: 0030-4026
Language: German
Abstract: Describes the method of preparation of MIM (metal-insulator-metal) thin film cathodes of metal-Al/sub 2/O/sub 3/-**Au** type with evaporated insulator, and the study of the electrical properties and the electron emission from an emission electron microscope (EEM). The insulator was deposited by electron beam evaporation of ultrapure Al/sub 2/O/sub 3/ in clean vacuum (p=10/sup -7/ mbar). The insulator layers were 20 nm, and the cover electrodes 15 nm in thickness. The field-emission micrographs demonstrate the uniform emission over the **emitter** surface. Stable emission for hours was maintained with emission currents of 5*10/sup -8/ A over a surface of 8 mm/sup 2/ (current density about 6*10/sup -7/ A/cm/sup 2/). Typically the total current between the base and the cover electrode was 2 mA at 8 V bias voltage.
Subfile: A B

30/3,AB/8
DIALOG(R)File 2:INSPEC

00887752 INSPEC Abstract Number: A76030912
Title: Surface electron barriers for helium-3 and helium-4: experimental study of density dependence
Author(s): Broomall, J.R.; Onn, D.G.
Author Affiliation: Dept. of Phys. & Div. of Health Sci., Univ. of Delaware, Newark, DE, USA
Conference Title: Proceedings of the 14th International Conference on Low Temperature Physics Part I p.439-42
Editor(s): Krusius, M.; Vuorio, M.
Publisher: North-Holland, Amsterdam, Netherlands
Publication Date: 1975 Country of Publication: Netherlands xiii+528 pp.
ISBN: 0 7204 9302 1
Conference Date: 14-20 Aug. 1975 Conference Location: Otaniemi, Finland
Language: English
Abstract: In order to avoid the pressure limitations inherent in studying electrons at a liquid-vapor interface, hot electrons were injected directly into the helium fluid from the **gold** surface of a cold cathode (Al-oxide-**Au**) thin-film **emitter**. This device provides electrons of known energy distribution averaging about 1 eV. The injected current was collected at a **gold**-plated anode and measured as a function of atomic density of helium sample and applied electric field strength epsilon up to 60000 V/cm.
Subfile: A

30/3,AB/9
DIALOG(R)File 2:INSPEC

00054915 INSPEC Abstract Number: B69017498
Title: Discharge tube satisfactorily low in radio-interfering noise
Inventor(s): Mizuno, M.; Akutsu, H.; Moriguchi, E.; Yamashita, K.; Kamiya, S.; Iwata, K.; Tawara, Y.; Iga, A.

Assignee(s): Matsushita Electronics Corporation, Osaka, Japan
Patent Number: US 3427492 Issue Date: 690211
Application Date: 670417
Priority Appl. Number: JP 41/25631 Priority Appl. Date: 660420
Country of Publication: USA
Language: English
Abstract: A discharge tube satisfactorily low in radio-interfering noise and equipped with cathodes **coated** with a **cathode emitter** consisting principally of oxides of barium, strontium and calcium and containing 0.05 to 10% by weight of a substance selected from the group consisting of cobalt boride and iron boride and further containing 1 to 8% by weight of a reducing metal having a high melting point and selected from the group consisting of zirconium, hafnium and **tantalum**, whereby a discharge tube low in noise intensity in the broadcasting frequency band is obtained.
Subfile: B

30/3,AB/10
DIALOG(R)File 2:INSPEC

00054914 INSPEC Abstract Number: B69017497
Title: Discharge tube
Inventor(s): Mizuno, H.; Akutsu, H.; Moriguchi, E.; Yamashita, K.; Kamiya, S.; Iwata, K.; Tawara, Y.; Iga, A.
Assignee(s): Matsushita Electronics Corporation, Osaka, Japan
Patent Number: US 3427491 Issue Date: 690211
Application Date: 670417
Priority Appl. Number: JP 4125630 Priority Appl. Date: 660420
Country of Publication: USA
Language: English
Abstract: A discharge tube satisfactorily low in radio-interfering noise is obtained by using cathodes **coated** with a **cathode emitter** consisting principally of oxides of barium, strontium and calcium and containing iron-cobalt borides with part of the iron substituted by a substance selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, **tantalum**, **chromium**, **molybdenum** , tungsten, aluminum and silicon and also containing a reducing metal having a high melting point selected from the group consisting of zirconium, hafnium, niobium and **tantalum**.
Subfile: B

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     FILE 'REGISTRY' ENTERED AT 14:45:16 ON 09 APR 2002
L1             1 S PT/CN
L2             3 S AU/CN
L3             2 S MO/CN
L4             3 S TA/CN
L5             0 S IR/CN
L6             1 S IRIDIUM/CN
L7             1 S RU/CN
L8             3 S CR/CN

     FILE 'HCAPLUS' ENTERED AT 14:46:16 ON 09 APR 2002
L9        440041 S PT OR PLATINUM OR AU OR GOLD
L10       585655 S MOLYBDENUM OR MO OR TANTALUM OR TA
L11       533406 S IRIDIUM OR IR OR RUTHERNIUM OR RU
L12       459309 S CHROMIUM OR CR
L13        32617 S EMITTER OR ECL
L14         4571 S (CATHODE (2N)LAYER) OR (FUSED(2N) ELECTROLYTE)
L15           60 S ELETRON
L16         4559 S (TUNNEL?)(3N)(FILM OR LAYER? OR COAT####)
L17       225173 S (METAL#### OR ALLOY? OR AMALGAM? OR INGOT? OR BULLION?)(5N)(D
L18        64246 S RUTHENIUM
L19         5948 S L13 AND (L1-L12)
L20          430 S L13 AND L18
L21           38 S L19 AND L14
L22            2 S L20 AND L14
L23            0 S L22 NOT L21

     FILE 'REGISTRY' ENTERED AT 14:52:07 ON 09 APR 2002
L24       718672 S AYS/CI

     FILE 'HCAPLUS' ENTERED AT 14:52:25 ON 09 APR 2002

     FILE 'REGISTRY' ENTERED AT 14:57:12 ON 09 APR 2002
L25        14175 S (GOLD OR AU) AND L24

     FILE 'HCAPLUS' ENTERED AT 14:58:10 ON 09 APR 2002
L26        25335 S L25

     FILE 'REGISTRY' ENTERED AT 15:00:25 ON 09 APR 2002
L27        11186 S (PT OR PLATINUM)AND L24
L28        23309 S L9 AND L24
L29       168357 S L10 AND L24
L30         8776 S L11 AND L24
L31         3458 S RUTHENIUM AND L24
L32       258173 S L12 AND L24

     FILE 'HCAPLUS' ENTERED AT 15:03:52 ON 09 APR 2002
L33           41 S L27 AND L13
L34          154 S L28 AND L13
L35          120 S L29 AND L13
L36           22 S L30 AND L13
L37            6 S L31 AND L13
L38          200 S L32 AND L13
L39           22 S L36 NOT L21
L40            0 S L37 NOT L39
L41            0 S L34 AND L14
L42            1 S L34 AND L16
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L43	410	S	L34 OR L35 OR L38
L44	47	S	L43 AND L17
L45	44	S	L44 NOT (L39 OR L21)
L46	13	S	L43 AND ((CATHODE?)(3N)(FILM OR LAYER? OR COAT####))
L47	0	S	L46 NOT (L39 OR L21 OR L46)

L39 ANSWER 1 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:207357 HCAPLUS
DN 136:222998
TI Electron gun for technological linear accelerator
AU Khodak, I. V.; Kushnir, V. A.; Mitrochenko, V. V.; Perezhogin, S. A.; Stepin, D. L.; Zavada, L. M.; Zhiglo, V. F.
CS National Science Center, "ACCELERATOR" R and D Production Establishment, Kharkov Institute of Physics and Technology, Kharkov, Ukraine
SO Voprosy Atomnoi Nauki i Tekhniki, Seriya: Yaderno-Fizicheskie Issledovaniya (2000), (2), 86-88
CODEN: VANIEK
PB Natsional'nyi Nauchnyi Tsentr "Khar'kovskii Fiziko-Tekhnicheskii Institut"
DT Journal
LA English
AB The design of a diode electron gun for a powerful technol. electron linac and exptl. investigations of the beam parameters at the gun exit are considered. The gun features quick cathode replacement. The gun optics and beam parameters were calcd. using the EGUN code. The gun produces a beam current of 2 A at an anode voltage 25 kV. Measured beam parameters correspond to calcd. results.

L39 ANSWER 2 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:490559 HCAPLUS
DN 135:229286
TI Lifetime properties of the electrodes of a single-cell electricity generating channel in the Enisei thermionic nuclear power system
AU Koryukin, V. A.
CS Russian Science Center Kurchatov Institute, Russia
SO Atomic Energy (New York, NY, United States)(Translation of Atomnaya Energiya) (2001), 90(1), 1-11
CODEN: AENYEZ; ISSN: 1063-4258
PB Consultants Bureau
DT Journal
LA English
AB The working capacity and operating stability of multi- and single-cell electricity generating channels of the nuclear power systems TOPAZ-1 and -2 are largely detd. by the emission properties of the **emitter** and collector electrodes. The emission properties and elemental compn. of the electrode surfaces of single-cell EGC E-16MO, which exceeded their lifetimes in the exptl. systems Ya-24 and -81, which are prototypes of the Enisei space nuclear power system, sep. EGCs in the L channels, and in thermal stands, are detd. The previously performed comprehensive investigation of various processes on the electrode surfaces of EGC, and the database collected, made it possible to perform a statistical anal. of the results and to est. the lifetime stability of the electrodes on the basis of the emission properties up to 3 yr with 95% probability.

L39 ANSWER 3 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:396567 HCAPLUS
DN 134:375072
TI Efficient, cost-effective, long-lasting gas discharge lamp having an oxide **emitter** electrode
IN Gartner, Georg; Van den Hoek, Willem
PA Philips Corporate Intellectual Property G.m.b.H., Germany; Koninklijke Philips Electronics N.V.
SO Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DT Patent

LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 1104005	A1	20010530	EP 2000-204015	20001114
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
DE 19956322	A1	20010531	DE 1999-19956322	19991123
JP 2001155679	A2	20010608	JP 2000-355169	20001122
PRAI DE 1999-19956322	A	19991123		

AB A low-pressure discharge lamp consists of metal substrates and metal electrodes prepd. from emitting metal powders made from reducing metals such as Al, Si, Ti, Zr, Hf, Ta, Mo, W and their alloys and noble metal powders selected from Re, Co, Ni, Ru, Pd, Rh, Ir, Pt and their alloys and .gtoreq.1 alk. earth oxide selected from CaO, SrO, and BaO.

IT 123-86-4, Butyl acetate 9004-70-0, Nitrocellulose
RL: NUU (Other use, unclassified); USES (Uses)
(binder; efficient, cost-effective, long-lasting gas discharge lamp having oxide **emitter** electrode)

IT 1304-28-5, Barium oxide, uses 1305-78-8, Calcium oxide, uses 1314-11-0, Strontium oxide, uses 1314-23-4, Zirconium dioxide, uses 7429-90-5, Aluminum, uses 7439-88-5, Iridium, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-15-5, Rhenium, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-21-3, Silicon, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-48-4, Cobalt, uses 7440-58-6, Hafnium, uses 7440-67-7, Zirconium, uses **42612-03-3**
RL: DEV (Device component use); USES (Uses)
(efficient, cost-effective, long-lasting gas discharge lamp having oxide **emitter** electrode)

L39 ANSWER 4 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:16043 HCAPLUS
DN 134:186932
TI Change in the properties of the electrodes of thermionic single-element EGC at the initial stage of operation
AU Koryukin, V. A.
CS Russian Science Center Kurchatov Institute, Russia
SO Atomic Energy (New York)(Translation of Atomnaya Energiya) (2001), Volume Date 2000, 89(1), 555-564
CODEN: AENYEZ; ISSN: 1063-4258
PB Consultants Bureau
DT Journal
LA English
AB The initial emission-adsorption characteristics of the electrodes of single-element electricity-generating channel (EGC) thermionic energy converters were studied. The basic processes occurring at the electrodes and in the interelectrode space at the initial stage of operation, which ultimately affect the stability of the emission-adsorption characteristics of the electrodes, were examd. The dominant factors singled out are the evapn. of the **emitter** material and the transport of this material through the gap onto the collector and the effect of the active components of the residual gases (oxygen and carbon monoxide) in the interelectrode gap on the electrode properties. The surface state of the electrodes varies during the thermal vacuum prepn. and during placement of the EGC into the working regime as well as in the nominal regimes.

IT 7439-98-7, Molybdenum, processes 7440-44-0, Carbon, processes
7440-46-2, Cesium, processes
RL: ANT (Analyte); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process)
(adsorbate; change in properties of electrodes of thermionic single-element electricity-generating channel at initial stage of operation)

L39 ANSWER 5 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:861257 HCAPLUS
DN 134:36040
TI Thermionic emission cathodes and their manufacture by impregnation
IN Nonaka, Ikumitsu; Taguchi, Sadanori
PA Hitachi, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000340097	A2	20001208	JP 1999-146639	19990526

AB The cathode comprises porous sintered high m.p. metal substrates impregnated with electron emitting materials, with oxide layers formed in between the substrate and the impregnated materials. In manuf. of the cathodes by (a) impregnation of high m.p. porous metal substrate with an electron emitting material mainly consisting of alk. earth oxides, including Ba oxide, and alumina, (b) removal of the excess materials, and (c) heat treatment in vacuum; the substrate is oxidized prior to its impregnation with the material. Optionally a coating, having high m.p. and high work function (e.g. Os-Ru alloy) may be formed on the electron-emitting surface of the impregnated substrate. Cathodes, for cathode ray tubes, showing stable high c.d. and having long lifetime are obtained.

IT 7440-33-7, Tungsten, processes **137949-21-4**, Osmium 85, ruthenium 15
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of thermionic emission cathodes by surface oxidn. and impregnation of porous high m.p. metal sinters with aluminum barium mixed oxide electron **emitters**)
IT 99035-55-9P, Barium calcium aluminate

L39 ANSWER 6 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:823089 HCAPLUS
DN 134:12467
TI Indirect heating impregnated type cathode-ray tube
IN Nonaka, Yasumitsu
PA Hitachi, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000323010	A2	20001124	JP 1999-129119	19990510

AB The cathode-ray tube has a high-m.p. metal cathode sleeve, a high-m.p.

metal cup set on the top of the sleeve so that the sleeve is sealed with the cap, a heater inside the sleeve (for heating the cap), a metal funnel-shaped support, and a metal cylinder holder. The metal cup is filled with porous high-m.p. metal pellets impregnated with a hot-electron-emitting material based on Ba-contg. alk. earth metal oxide and the funnel-shaped support and the cylinder holder are placed so that thermal conduction from the heater through the sleeve and the cylinder holder is reduced, i.e., thermal efficiency is enhanced, and that the structure is not affected with vibration.

IT 99035-55-9, Aluminum barium calcium oxide
RL: DEV (Device component use); USES (Uses)
(electron **emitter**; in indirect heating impregnated type cathode-ray tube having funnel for supporting sleeve involving heater and cylinder holder)

IT **172890-99-2**, Osmium, rutheni

L39 ANSWER 7 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:620816 HCAPLUS
DN 133:186817
TI Mo-(0-0.15)% Ir crystal for thermal **emitter** for surface ionization of organic compounds in air and method of its activation
IN Burkhanov, G. S.; Korenovskii, N. L.; Korolenko, I. I.; Kuz'mishchev, V. A.; Lyakishev, N. P.; Manokhin, I. K.; Nazarov, E. G.; Palitsin, V. V.; Prokhorov, A. M.; Rasulev, U. Kh.; Fesenko, A. V.; Chebyshev, A. V.; Shumilkin, A. V.
PA Institut Metallurgii im. A. A. Baikova RAN, Russia; Institut Elektroniki im. U. A. Arifova AN RUZ
SO Russ.
From: Izobreteniya 1999, (27), 393.
CODEN: RUXXE7
DT Patent
LA Russian
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RU 2138877	C1	19990927	RU 1997-113927	19970812

AB Title only translated.
IT Electron sources
(molybdenum-iridium crystal for thermal **emitter** for surface ionization of org. compds. in air and method of activation)
IT Organic compounds, processes
RL: REM (Removal or disposal); PROC (Process)
(molybdenum-iridium crystal for thermal **emitter** for surface ionization of org. compds. in air and method of activation)
IT Ionization
(surface; molybdenum-iridium crystal for thermal **emitter** for surface ionization of org. compds. in air and method of activation)
IT **288309-86-4**, Iridium 0-0.2, molybdenum 100
RL: TEM (Technical or engineered material use); USES (Uses)
(molybdenum-iridium crystal for thermal **emitter** for surface ionization of org. compds. in air and method of activation)

L39 ANSWER 8 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:241678 HCAPLUS
DN 132:259395
TI Cathode material of electron beam device and preparation method thereof
IN Choi, Jong Seo; Kim, Yoon Chang; Joo, Kyu Nam; Osaulenko, Nikolay; Shutovsky, Vladislav; Kultashev, Oleg
PA Samsung SDI Co., Ltd., S. Korea; Nikos-Eco, Ltd.

SO PCT Int. Appl., 23 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000021110	A1	20000413	WO 1999-KR599	19991001
W: CN, DE, GB, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
KR 2000028717	A	20000525	KR 1999-41307	19990927
EP 1129463	A1	20010905	EP 1999-970205	19991001
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRAI UA 1998-105226 A 19981005
WO 1999-KR599 W 19991001

AB A cathode material of an electron beam device comprising 0.5 to 9.0% by wt. of a rare-earth metal of the Ce group, 0.5 to 15.0% by wt. of W and/or Re, 0.5 to 10% by wt. of Hf and the balance of Ir is provided. Since the cathode material has excellent plasticity, it is easy to manuf. small-size **emitters**. Also, since the d. of the electron emission of the cathode material is high and the working temp. is low, a long lifetime can be ensured. Also, the cathode material is useful as a cathode material of an electron beam device.

IT Alloying
Cathodes
Electronic device fabrication
(cathode material of electron beam device and prepn. method thereof)

IT Rare earth alloys
RL: DEV (Device component use); USES (Uses)
(cerium-group; cathode material of electron beam device and prepn. method thereof)

L39 ANSWER 9 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:130857 HCAPLUS
DN 132:139784
TI Electrical output parameters of efficient cylindrical thermionic energy converters
AU Kalandarishvili, A. G.; Kaibyshev, V. Z.; Lysikov, A. V.; Ermilov, B. I.
CS Kurchatov Institute, Russian Scientific Center, Russia
SO Atomic Energy (New York)(Translation of Atomnaya Energiya) (2000), Volume Date 1999, 87(2), 577-582
CODEN: AENYEZ; ISSN: 1063-4258
PB Consultants Bureau
DT Journal
LA English

AB Elec. output parameters are presented for four one-element cylindrical thermionic energy converters operating with cesium plasmas and electrode gaps from 0.3 to 0.8 mm. The cylindrical **emitters** were made by vapor-phase epitaxial deposition of tungsten on cylindrical molybdenum substrates having [111] axial orientation under the conditions where the deposit is automatically formed faced with (110) planes. The av. vacuum work function is up to 5.3 eV. The collector is made of a molybdenum-ruthenium alloy. Tests have been made on how the vacuum work function of the **emitter** influences the output parameters. Calcns. combined with expts. have been used to est. the work functions and electron temps. in the plasma.

IT Thermionic energy converters
(elec. output parameters of efficient cylindrical thermionic energy converters)
IT **69207-32-5**
RL: DEV (Device component use); USES (Uses)
(collector; elec. output parameters of efficient cylindrical thermionic energy converters with)
IT 7440-33-7, Tungsten, uses
RL: DEV (Device component use); USES (Uses)
(**emitter**; elec. output parameters of efficient cylindrical thermionic energy converters with)
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L39 ANSWER 11 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:105779 HCAPLUS
DN 126:232138
TI Ir-Ce cathodes as high-density **emitters** in electron-beam ion sources

AU Rao, Roberto; Kultashev, Oleg
CS Inst. Angewandte Phys. Frankfurt Main, grankfurt, 60054, Germany
SO Meas. Sci. Technol. (1997), 8(2), 184-188
CODEN: MSTCEP; ISSN: 0957-0233
PB Institute of Physics Publishing
DT Journal
LA English
AB In electron-beam ion sources (EBIS/T), cathodes with high current densities are of great interest. Commonly used cathodes like impregnated tungsten cathodes and LaB6 cathodes emit current densities of 10 and 100 A cm-2, resp. In order to obtain high electron beam current densities of 103 A cm-2 for the stepwise ionization of few-electron, high-Z ions or for the fast prodn. of low-Z bare nuclei, electron-beam compression has to be very high using these cathodes. A high beam compression increases the beam temp., which limits the c.d. High current densities are also limited by the magnetic flux through the cathode. The application of small highly emissive cathodes, like Ir-Ce cathodes, reduces the magnetic flux through the cathode, so that a magnetic shield of the **emitter** is no longer required. By emitting relatively high currents from these small cathodes, hence emitted high emission c.d., the desired beam current densities can be attained by a moderate beam compression.
IT Ion sources
(electron-beam; iridium-cerium cathodes as high-d. **emitters** in electron-beam ion sources)
IT Cathodes
(iridium-cerium cathodes as high-d. **emitters** in electron-beam ion sources)
IT **39349-00-3**
RL: DEV (Device component use); USES (Uses)
(iridium-cerium cathodes as high-d. **emitters** in electron-beam ion sources)

L39 ANSWER 12 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:94002 HCAPLUS
DN 126:112048
TI Electron **emitter** and an electron source and image-forming apparatus using it
IN Kishi, Fumio; Osada, Yoshiyuki; Kawade, Hisaaki; Tsukamoto, Takeo; Yoshida, Shigeki; Kusaka, Takao
PA Canon K. K., Japan
SO Eur. Pat. Appl., 45 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 747921	A2	19961211	EP 1996-303809	19960529
	EP 747921	A3	19961218		
	EP 747921	B1	19991215		
	R: DE, FR, GB, IT, NL				
	US 5939824	A	19990817	US 1996-654262	19960528
	CN 1146623	A	19970402	CN 1996-107769	19960530
	JP 09237568	A2	19970909	JP 1996-157431	19960530
PRAI	JP 1995-154068		19950530		
	JP 1995-342707		19951228		

AB An electron **emitter** includes a pair of electrodes disposed opposite to each other, a conductive film in contact with both the pair of electrodes and an electron-emitting region formed in a part of the

conductive film. The conductive film is composed of fine particles including a 1st metal element serving as a main constituent element and .gtoreq.1 2nd metal element. The 2nd metal element ppts. on the surface of the conductive film and thus forms a low-work-function layer. When a voltage is applied between the pair of electrodes, the 2nd metal element moves from the inside of the conductive film to at least part of its surface.

IT Cathodes
(electron **emitter** and electron source and image-forming app. using it)

IT Television
(electron **emitter** and electron source for)

IT Electron sources
Electrooptical imaging devices
(electron **emitter** for)

IT 1314-08-5, Palladium oxide (PdO) 7440-02-0, Nickel, uses 7440-06-4, Platinum, uses 7440-32-6, Titanium, uses 7440-47-3, Chromium, uses 7440-57-5, Gold, uses 12006-69-8 12337-92-7 106524-62-3 108673-66-1 122869-45-8, Palladium 95, titanium 5 (atomic) 127907-73-7 **185956-17-6** 185956-20-1 185956-22-3 185956-25-6 185956-28-9 185956-30-3 185956-32-5 185956-34-7 185956-36-9 185956-38-1 185956-40-5 185956-42-7 185956-44-9 185956-46-1 185956-48-3 185956-50-7 185956-52-9 185956-54-1 185956-56-3 185956-58-5 185956-60-9 185956-62-1 185956-64-3 185956-66-5 185956-69-8 185956-71-2 185956-73-4 185956-75-6 185956-77-8 185956-79-0
RL: DEV (Device component use); USES (Uses)
(electron **emitter** contg.)

L39 ANSWER 13 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:483758 HCAPLUS
DN 125:127363
TI X-ray tubes with low-temperature **emitters**
IN Hell, Erich; Hoernig, Mathias; Kuhn, Helmut
PA Siemens A.-G., Germany
SO Ger., 8 pp.
CODEN: GWXXAW
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19513290	C1	19960725	DE 1995-19513290	19950407
	US 5703924	A	19971230	US 1996-627999	19960404
	CN 1138742	A	19961225	CN 1996-104604	19960405
	JP 08287854	A2	19961101	JP 1996-85536	19960408
PRAI	DE 1995-19513290		19950407		

AB X-ray tubes provided with an aperture positioned between the anode and the electron **emitter** so that the electrons must pass through it are described in which the aperture is maintained at the anode potential. Electrons produced at the anode are thus in a field-free region between the anode and the aperture, ensuring that only those electrons passing through the aperture reach the electron **emitter**. This reduces the no. of electron impacts on the **emitter** and thus extends the **emitter** (and thereby the tube) lifetime.

IT Group VIII element alloys
RL: DEV (Device component use); USES (Uses)
(x-ray tubes with apertures at anode potential for low-temp. **emitter** preservation)

IT X-ray devices
(sources, x-ray tubes with apertures at anode potential for low-temp. **emitter** preservation)
IT barium alloy, nonbase
calcium alloy, nonbase
cerium alloy, nonbase
gadolinium alloy, nonbase
lanthanum alloy, nonbase
rhenium alloy, base
thorium alloy, nonbase
uranium alloy, nonbase
yttrium alloy, nonbase
RL: DEV (Device component use); USES (Uses)
(x-ray tubes with apertures at anode potential for low-temp. **emitter** preservation)
IT 7439-98-7, Molybdenum, uses 7440-33-7, Tungsten, uses
RL: DEV (Device component use); USES (Uses)
(lanthanum oxide-doped; x-ray tubes with apertures at anode potential for low-temp. **emitter** preservation)
IT 12008-21-8, Lanthanum hexaboride **37186-87-1 39349-00-3 39349-36-5**, Iridium, lanthanum 39365-75-8, Thoriated tungsten
RL: DEV (Device component use); USES (Uses)
(x-ray tubes with apertures at anode potential for low-temp. **emitter** preservation)
IT 1312-81-8, Lanthanum oxide
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(x-ray tubes with apertures at anode potential for low-temp. **emitter** preservation)

L39 ANSWER 14 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:142273 HCAPLUS
DN 124:191717
TI Small transformers and inverter and electron **emitter** circuits using thereof
IN Yoshizawa, Katsuto; Abe, Tooru; Arakawa, Shunsuke
PA Hitachi Metals Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07335450	A2	19951222	JP 1994-129046	19940610

AB Title transformers comprise (1) a laminated magnetic core (thickness .ltoreq.3 mm) which is made from microcryst. (av. nanocryst. grain size .ltoreq.100 nm) or amorphous soft magnetic alloy films (thickness each .ltoreq.30 .mu.m), (2) a primary coil, and (3) secondary coil. The core is made of alloys contg. Fe and Co and/or Ni. The transformers using non-ferrite magnetic cores are compact and useful for inverter circuits in small cold cathode fluorescent lamps.
IT Transformers
(fluorescent lamp; small transformers and inverter and electron **emitter** circuits using thereof)
IT Electric lamps
(fluorescent, small; small transformers and inverter and electron **emitter** circuits using thereof)
IT Magnetic cores

(transformer, laminated; small transformers and inverter and electron **emitter** circuits using thereof)

IT 174143-45-4 174143-47-6 174143-48-7 174143-49-8 174143-50-1
174143-51-2 174143-52-3 174143-53-4 174143-54-5 174143-55-6
174143-56-7 174143-57-8 174143-58-9 174143-59-0 174143-60-3
174143-61-4 174143-62-5 174143-63-6 174143-64-7 174143-65-8
174143-66-9 **174143-67-0** 174143-68-1 174143-69-2
RL: PRP (Properties)
(amorphous magnetic film for laminated core in small transformers and inverter and electron **emitter** circuits using thereof)

IT 174143-44-3 174143-46-5
RL: PRP (Properties)
(microcryst. magnetic film for laminated core in small transformers and inverter and electron **emitter** circuits using thereof)

L39 ANSWER 15 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:350434 HCAPLUS
DN 122:121061
TI Cathode substrates
IN Mizukami, Masahiko
PA Tokyo Tungsten Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06176684	A2	19940624	JP 1992-349988	19921203

AB The substrates for electron **emitters** are made from sintered W particles whose surface is coated with Ir to give an Ir-W alloy. The alloy particles give decreased operational temp. and increased c.d.

IT Cathodes
(**emitter**; iridium-tungsten alloy substrate for)

IT **42612-03-3P**
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(cathode **emitter** substrate; manuf. by sintering of powd. iridium and tungsten for)

IT 7440-33-7, Tungsten, reactions
RL: RCT (Reactant)
(powd.; sintering with iridium powder for formation of alloy cathode substrate)

IT 7439-88-5, Iridium, reactions
RL: RCT (Reactant)
(powd.; sintering with tungsten powder for formation of alloy cathode substrate)

L39 ANSWER 16 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:287820 HCAPLUS
DN 120:287820
TI Impregnated cathodes and manufacture thereof
IN Sugimura, Toshikazu; Narita, Kazunori
PA Kansai Nippon Electric, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05282994	A2	19931029	JP 1992-77170	19920331

AB The title process comprises dry pressing of a 1st powder mixt. from a refractory metal and an electron **emitter**, and a 2nd powder mixt. from the 1st powder mixt. and an additive of Ir, Os-Ru, Sc2O3, In2O3, and/or Y2O3 to a lower and an upper portion of a form, resp., and sealing of the form into a capsule and hot isostatic pressing thereof.

IT Cathodes
(sintered impregnated, manuf. of)

IT 1304-28-5, Barium oxide, uses 1305-78-8, Calcium oxide, uses 1344-28-1, Aluminum oxide, uses
RL: PROC (Process)
(impregnated sintered cathodes from **emitters** contg., manuf. of)

IT 7440-33-7, Tungsten, uses
RL: PROC (Process)
(impregnated sintered cathodes from, manuf. of)

IT 1312-43-2P, Indium oxide (In2O3) 1314-36-9P, Yttrium oxide (Y2O3), uses 7439-88-5P, Iridium, uses 12060-08-1P, Scandium oxide (Sc2O3) **87284-15-9P**
RL: IMF (Industrial manufacture); PREP (Preparation)
(sintered cathodes impregnated with, manuf. of)

L39 ANSWER 17 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:181090 HCAPLUS
DN 120:181090
TI Manufacture of impregnated cathode **emitter**
IN Suzuki, Yukio; Taguchi, Tadanori; Saito, Shunji
PA Hitachi Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05225897	A2	19930903	JP 1992-26514	19920213

AB The title manufg. involves (1) heating a sintered porous refractory metal and an electron-emitting metal carbonate press-molded pellet in a reductive atm. to decomp. the carbonate until completion of CO2 discharging and also reducing oxide surface of the porous metal, (2) laminating the donor metal on the porous refractory metal in-situ in the reductive atm., and (3) heating the laminate at a high temp. to melt the press-mold to be impregnated into the porous refractory metal. The manufg. process provides the impregnation in-situ in the reductive atm. for preventing deterioration of emission characteristics.

IT Cathodes
(thermionic, manuf. of, by impregnation of **emitter** material melts in porous metal supports)

IT **87284-15-9**, Osmium, ruthenium
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings, on cathode **emitters**)

IT 471-34-1, Calcium carbonate, uses 513-77-9, Barium carbonate 1344-28-1, Alumina, uses
RL: USES (Uses)
(electron emission material contg., for impregnation in porous refractory metal supports)

IT 7440-33-7, Tungsten, uses

RL: USES (Uses)
(porous support for cathode **emitter**, impregnation of **emitter** material in)

L39 ANSWER 18 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:676705 HCAPLUS
DN 119:276705
TI Sub-surface iridium depletion in dilute solution tungsten-iridium alloys due to high temperature work function testing
AU D'Cruz, L. A.; Jacobson, D. L.
CS Dep. Chem., Bio Mater. Eng., Arizona State Univ., Tempe, AZ, 85287, USA
SO Int. J. Refract. Met. Hard Mater. (1993), Volume Date 1992, 11(4), 223-34
CODEN: IRMME3; ISSN: 0958-0611
DT Journal
LA English
AB W-Ir alloys contg. <2 wt.% Ir exhibit the highest work functions among candidate alloys for thermionic **emitters**. The interrelationship between work function, compn., and microstructure of the alloys was investigated to ascertain the role of Ir on modification of the work function. The effective work function was detd. using a vacuum emission vehicle employing the thermionic method. Electron probe microanal. was used to characterize the sub-surface Ir depletion caused by elevated temp. testing. Theor. ests. of the equil. segregation of Ir in W could not adequately account for the magnitude of Ir depletion found at the electrode surfaces. An alternative explanation for the sub-surface Ir depletion is proposed and involves the creation of Ir-rich surface layers during the pre-test heat treatment of the alloys.
IT Work function
(of tungsten-iridium alloys, subsurface iridium depletion during high-temp. testing of)
IT **133754-99-1 151530-83-5**, Iridium 0.2, tungsten 100
151530-84-6, Iridium 1.7, tungsten 98
RL: PRP (Properties)
(iridium loss from, during high-temp. work function testing)
IT 7439-88-5, Iridium, properties
RL: PRP (Properties)
(loss of, from tungsten-iridium alloys, during high-temp. work function testing)

L39 ANSWER 19 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:114902 HCAPLUS
DN 118:114902
TI Impregnated cathode and cathode-ray tube using it
IN Nonaka, Ikumitsu
PA Hitachi, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 04280029	A2	19921006	JP 1990-138181	19900530

AB The cathode is obtained by melting an electron-emitting alk. earth oxide contg. at least BaO and CaO at mol ratio 0.5-1.5 in a porous substrate of W, Mo, Ta, Re, Ir, etc., or their alloys and impregnating. The cathode showed good emission lifetime.
IT Cathode-ray tubes
(impregnated cathodes for, contg. alk. earth oxides in porous

refractory metals)
IT Cathodes
(impregnated, contg. alk. earth metal oxides, for cathode-ray tubes)
IT 12060-08-1, Scandium oxide 1304-28-5, Barium oxide, uses 1305-78-8, Calcium oxide, uses
RL: PROC (Process)
(cathodes from refractory metals impregnated with, for cathode-ray tubes)
IT 7439-88-5, Iridium, uses 7439-98-7, Molybdenum, uses 7440-04-2, Osmium, uses 7440-15-5, Rhenium, uses 7440-18-8, Ruthenium, uses 7440-25-7, Tantalum, uses 7440-33-7, Tungsten, uses **87284-15-9**
RL: DEV (Device component use); USES (Uses)
(cathodes from, impregnated with alk. earth oxides, for cathode-ray tubes)
IT 1344-28-1, Alumina, uses
RL: USES (Uses)
(impregnated cathode electron **emitter**, for cathode-ray tube)

L39 ANSWER 20 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1991:693103 HCAPLUS
DN 115:293103
TI Impregnated cathodes for large-density current
IN Watabe, Isato; Yamamoto, Yoshihiko; Sasaki, Susumu; Yaguchi, Tomio
PA Hitachi, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 03105827	A2	19910502	JP 1989-242006	19890920

AB A long-life cathode, comprising a thermally resistive porous metal base impregnated with an electron-emitting substance, and a thin film from a mixt. of W, Sc2O3, and Sc2W3O12 (or Sc6WO12), which decreases the work function of the electron-emission surface of the metal base, is characterized in that a Sc-supplying thin intermediate layer is placed between the metal base and the thin film.
IT Cathodes
(impregnated, for large-d. current)
IT 89742-05-2
RL: USES (Uses)
(electron-**emitter**, cathodes impregnated with, for large-d. current)
IT 7440-33-7, Tungsten, uses and miscellaneous 12060-08-1, Scandium oxide (Sc2O3) 12293-96-8, Scandium tungsten oxide (Sc6WO12) 13701-71-8, Scandium tungsten oxide (Sc2W3O12) 137774-52-8 137774-53-9
137774-54-0 137774-55-1 137774-56-2 137774-57-3
137774-58-4 137774-59-5 137774-60-8 137774-61-9 137774-62-0
RL: USES (Uses)
(impregnated cathodes contg., for large-d. current)

L39 ANSWER 21 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1991:93176 HCAPLUS
DN 114:93176
TI Iridium-coated dispenser cathode for CRT
AU Kimura, Sakae; Yakabe, Toru; Matsumoto, Sadao; Miyazaki, Daisuke; Yoshii, Tsuyoshi; Fujiwara, Minoru; Koshigoe, Shimpei
CS Electron Device Div., Toshiba Corp., Saiwaiku, 210, Japan
SO IEEE Trans. Electron Devices (1990), 37(12, Pt. 2), 2564-7
CODEN: IETDAI; ISSN: 0018-9383
DT Journal
LA English
AB A compact dispenser cathode was developed for application to cathode ray tubes (CRT). A cathode **emitter** comprised BaO, CaO, and Al2O3 in a molar ratio of 4:1:1, was impregnated into a porous W pellet. Intermetallic compd. of W and Ir was formed on the cathode pellet. Heater ratings were 6.3 V x 0.2 A. Emission characteristics were measured by using color CRT's. As the result, a cathode peak loading of 15 A/cm2 was ensured in the space-charge region. Life tests with a peak loading of 7.5 A/cm2 were conducted over the 10000 h. The decrease in emission current after 10000 h was within only 10% of the initial value. Reliability of cathode performance was assured in terms of breakdown potential between the heater and the cathode, emission characteristics, life performance, grid emission, and the drift in cutoff potential. The effects of the coating thickness upon the emission characteristics are discussed.
IT Cathodes
(dispenser, iridium coated, for cathode ray tube)
IT 7439-88-5, Iridium, uses and miscellaneous
RL: USES (Uses)
(cathodes coated with, for cathode ray tubes)
IT 7440-25-7, Tantalum, uses and miscellaneous **37377-76-7**
39332-67-7, Kovar
RL: USES (Uses)
(cathodes contg., emission characteristics of)
IT 89742-05-2, Barium calcium aluminate (Ba4CaAl2O8)
RL: USES (Uses)
(cathodes contg., impregnated in tungsten pellet, emission characteristics of)
IT 7440-33-7, Tungsten, uses and miscellaneous
RL: USES (Uses)
(cathodes of barium calcium aluminate impregnated in pellets of, emission characteristics of)

L39 ANSWER 22 OF 22 HCAPLUS COPYRIGHT 2002 ACS
AN 1986:198276 HCAPLUS
DN 104:198276
TI Semiconductor device with a tantalum-iridium barrier layer contact structure
IN Todd, Anthony G.; Wickenden, Dennis K.
PA General Electric Co. PLC, UK
SO U.S., 4 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4546373	A	19851008	US 1984-575066	19840130
PRAI	GB 1983-3298		19830207		

AB In a bipolar transistor for a temp. sensor having an adjustable const.-current source connected between the base and collector regions, and a high-gain amplifier having the input connected to the current source and the output to the **emitter** region, the **emitter**-base junction is a heterojunction, Au contacts are sepd. by amorphous Ta-Ir alloy barrier layers from the n-type GaAs base, the p-type GaAs collector, and the p-type Ga1-xAlxAs **emitter**, resp. The compn. range of the alloy is 40-70% Ta, and the lower end of this range supplies a better barrier to Au migration. Hence, the sensor can be used to measure higher temps.

IT Temperature
(sensors, heterojunction bipolar transistors for, contg. iridium-tantalum alloy diffusion barriers)

IT Transistors
(bipolar, contg. heterojunctions and iridium-tantalum alloy diffusion barriers, for temp. sensors)

IT 1303-00-0D, solid solns. with aluminum arsenide
RL: USES (Uses)
(bipolar transistors contg. heterojunctions from gallium arsenide and, for temp. sensors)

IT 22831-42-1D, solid solns. with gallium arsenide
RL: DEV (Device component use); USES (Uses)
(bipolar transistors contg. heterojunctions from gallium arsenide and, for temp. sensors)

IT 1303-00-0, uses and miscellaneous
RL: DEV (Device component use); USES (Uses)
(bipolar transistors contg., for temp. sensors)

IT **101964-86-7**
RL: TEM (Technical or engineered material use); USES (Uses)
(diffusion barriers from, in heterojunction bipolar transistors)

IT 7440-57-5, properties
RL: TEM (Technical or engineered material use); USES (Uses)
(diffusion barriers of iridium-tantalum alloy for, in heterojunction bipolar transistors)

L42 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:475876 HCAPLUS
DN 127:89684
TI Magnetic devices and magnetic sensors using thereof
IN Mizushima, Koichi; Konno, Teruyuki; Inomata, Koichiro; Yamauchi, Hisashi
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09128719	A2	19970516	JP 1996-189366	19960718
	JP 3217703	B2	20011015		
PRAI	JP 1995-225625	A	19950901		

AB The title magnetic sensors have a three terminal device comprising an **emitter**, a base, and a collector, wherein the semiconductor collector layer and a magnetic laminated base film make a Schottky junction. The magnetic laminated base film has an nonmagnetic film bound between opposing magnetic films. The metallic **emitter** film and base film are connected each other via a **tunneling** insulator **film**. The sensors provide variation of current across the magnetic device by magnetization orientation of the magnetic film changed by an external magnetic field direction. The devices gives high sensitivity by low c.d.

L45 ANSWER 1 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:923312 HCAPLUS
DN 136:46996
TI Manufacture of cathodes for electron tubes
IN Chiba, Toru
PA Nec Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001351505	A2	20011221	JP 2000-169566	20000606

AB Ni powders, **emitter** material powders and rare earth oxide powders are mixed, and hot pressed to form sintered bodies, the bodies are processed into cathode pellets, and Ni-Cr **alloy films** are formed on the other side of electron-emitting surface. Cr is fast and uniformly diffused in the pellets so that manufd. cathodes have stable electron emission characteristic.

L45 ANSWER 2 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:381858 HCAPLUS
DN 135:124859
TI Antireflection coated refractory metal matched **emitters** for use with GaSb thermophotovoltaic generators
AU Fraas, Lewis; Samaras, John; Avery, James; Minkin, Leonid
CS JX Crystals Inc, Issaquah, WA, 98027, USA
SO Conference Record of the IEEE Photovoltaic Specialists Conference (2000), 28th, 1020-1023
CODEN: CRCNDP; ISSN: 0160-8371
PB Institute of Electrical and Electronics Engineers
DT Journal
LA English
AB GaSb thermophotovoltaic cells can be combined with IR **emitters** to produce elec. power. In this application, both power d. and efficiency are important. High power d. requires a practical target **emitter** temp. of 1600.degree. K. In order to reach this temp., spectral efficiency becomes extremely important. Radiation with wavelengths greater than 1.8 .mu.m cannot be converted by the GaSb cells; instead, this long wavelength radiation overheats the cells, limiting power d. and efficiency. A soln. is to use refractory-metal coated **emitters**, because metals have low emittance at long wavelengths. Further, an antireflection (AR) coating on the metal can enhance the emittance in the cell convertible band. A spectral efficiency of 75% has been demonstrated for an AR coated **emitter** and a GaSb cell power d. of 1.5 W/cm2 has been measured with an AR coated tungsten **emitter** operating at 1555.degree. K.

L45 ANSWER 3 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:323080 HCAPLUS
DN 135:85335
TI Development of thin-**film metal** hydrides for integration into field emission displays
AU Chalamala, Babu R.; Reuss, Robert H.
CS Motorola, Inc., Semiconductor Products Sector, Digital DNA Laboratory, Tempe, AZ, 85284, USA
SO Applied Physics Letters (2001), 78(19), 2967-2969

CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
AB We report on the development of solid-state hydrogen sources utilizing thin-**film metal** hydrides. We demonstrate that integration of these **metal** hydride thin **films** facilitate a practical method to introduce controlled amts. of hydrogen into sealed field emission display assemblies. To prove the concept, we operated Mo field **emitter** arrays without emission current loss for 400 h of continuous operation with titanium-hydride-coated stainless steel anode plates. Comparable arrays operated in the absence of hydride films, but in ultrahigh vacuum, had emission current degrdn. of over 50% in less than 100 h of operation.
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 4 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:574048 HCAPLUS
DN 133:153231
TI Antireflection coated refractory metal matched IR **emitter** for use in thermophotovoltaic generators
IN Fraas, Lewis M.; Magendanz, Galen; Avery, James E.
PA Jx Crystals Inc., USA
SO PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000048231	A2	20000817	WO 1999-US24736	19991022
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 2000051216	A5	20000829	AU 2000-51216	19991022
PRAI US 1998-113353P	P	19981221		
US 1999-120817P	P	19990219		
US 1999-406727	A	19990928		
WO 1999-US24736	W	19991022		

AB Thermophotovoltaic (TPV) elec. power generators have **emitters** with IR outputs matched with usable wavelengths for converter cells. The **emitters** have durable substrates, optional refractory isolating layers, conductive refractory metal or inter-**metallic** **emitter** layers, and refractory **metal oxide** antireflection layers. SiC substrates have W or TaSi2 **emitter** layers and 0.14 .mu. ZrO2 or Al2O3 antireflection layers used as IR **emitters** for GaSb converter cells in TPV generators.

L45 ANSWER 5 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:541583 HCAPLUS
DN 133:289670
TI Studies on the interaction between thin film materials and Mo field

emitter arrays
AU Chalamala, Babu R.; Reuss, Robert H.
CS Flat Panel Display Division, Motorola Incorporated, Tempe, AZ, 85284, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (2000), 18(4), 1825-1832
CODEN: JVTBD9; ISSN: 0734-211X
PB American Institute of Physics
DT Journal
LA English
AB A simple method for the evaluation of materials suitable for the fabrication of field emission vacuum microelectronic devices is presented. Since there can be a wide range of electron and ion interactions with the device, it is important to be able to quickly assess if a material may have a particular adverse effect on emission performance under operational conditions. The technique is based on the sensitivity of a large field **emitter** array to the outgassing or desorption of gas species from thin films under electron beam excitation. Mo field **emitter** arrays degraded rapidly with stainless steel anodes coated with various oxide materials. The extent of degrdn. is the most rapid with SiO2, Si3N4, and MoO3 thin films. Stainless steel anodes with Mo and Nb thin films show a faster degrdn. rate than stainless steel anodes, most likely because of native oxides grown during processing and handling. The emission behavior in the presence of Ir, Pd, Al, Zn, and Ti **metal films** and barrier materials like C and TaN is similar to stainless steel ref. data. Once the oxide films are covered with barrier layers like C and TaN, emission decay rates approach the values obtained with stainless steel ref. anodes. The obsd. emission current degrdn. is consistent with a model based on the liberation of oxygen from the surface of electron beam bombarded materials. Using controlled oxygen exposure expts., the authors detd. the equiv. local oxygen pressures in the presence of various thin films. With thin films of Nb, ZrO2, Ta2O5, MgO, Nb2O5, and Al2O3, the emission degrdn. is akin to having a local O2 partial pressure in the 1 .times. 10-7-1 .times. 10-6 Torr range and with Mo, MoO3, Si3N4, and SiO2, this is equiv. to having local O2 pressures of 1 .times. 10-5 Torr.
RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 6 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:537534 HCAPLUS
DN 133:113541
TI P-type ohmic contact forming method
IN Park, Sung-ho; Park, Chol-soon; Park, Hyung-moo
PA Korea Electronics + Telecommunication Research Institute, S. Korea
SO Repub. Korea, No pp. given
CODEN: KRXXFC
DT Patent
LA Korean
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 9706734	B1	19970429	KR 1993-27627	19931214

AB A technique is described that provides a method for forming a p-type ohmic contact of a heterojunction bipolar transistor. The method includes the steps of (A) sequentially forming a buffer layer, subcollector layer, collector, base layer, spacer layer, **emitter** layer and capping layer on a semi-insulating AlGaAs substrate, (B) depositing an **emitter** metal on the capping layer and then mesa-etching the capping layer to the surface of the base layer using the **emitter**

metal as a mask, (C) forming a p-type base metal by sequentially depositing a 1st Cr-metal layer, a AuZn alloy layer, 2nd Cr metal layer, Pd metal layer and Au metal layer on the etched base layer and (D) continuously covering the entire substrate with a Si oxide layer and Si nitride layer. Thereby, it is possible to improve the characteristic of the p-type ohmic contact.

L45 ANSWER 7 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:50029 HCAPLUS
DN 132:115264
TI Electron **emitter**, electron source, imaging device, and manufacture of the **emitter**, the source, and the device
IN Kobayashi, Tamaki
PA Canon K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000021290	A2	20000121	JP 1998-187978	19980703

AB The electron **emitter** consists of a pair of electrode and an elec. conductor film between the electrodes, which is prepd. by (1) forming a **film** comprising 2 different **metal** layers (e.g., the top Pd layer and the bottom Ta or W layer), and (2) performing the so-called forming, i.e., supplying elec. current to the film and forming a narrow crack which emits electrons. The 2 layers are alloyed at the crack in the 2nd step and electrons are efficiently emitted from the crack which is prevented from excessive expansion. An electron source or an imaging device, e.g., electroluminescent display, etc., is manufd. by combining plurality of the electron **emitters**.

L45 ANSWER 8 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:690271 HCAPLUS
DN 131:304539
TI Field-emission cold cathode and manufacture of the cathode
IN Muroda, Masao
PA Nippon Denshi K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11297189	A2	19991029	JP 1998-99391	19980410

AB The cathode has an **emitter** at the center of a polycryst. metal filament and the **emitter** comprises a body-centered cubic crystal and 2 face-centered cubic crystal layers which successively cover the bcc crystal. The cathode is manufd. by successively forming the 2 fcc layers on the bcc metal so that a nanoemitter with ternary alloy surface layer (comprising the 3 crystals) is formed. The **emitter** having the ternary **alloy** surface **film** has merits compared with conventional ones, e.g., self regeneration effect by heat diffusion on the surface, etc.

L45 ANSWER 9 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:639279 HCAPLUS

DN 131:304368
TI The mechanism of localized in-pile corrosion of zirconium alloys. (II)
AU Ozaki, Satoru
CS Nuclear Engineering Laboratory, Toshiba Corporation, Shinsugita-cho, Isogo-ku, Yokohama, 235-8523, Japan
SO J. Nucl. Sci. Technol. (1999), 36(7), 605-612
CODEN: JNSTAX; ISSN: 0022-3131
PB Atomic Energy Society of Japan
DT Journal
LA English
AB The ".beta.-induced elec. fields" in a reactor, proposed in a previous paper, are estd. more quant. in two cases. One of the cases is that of the shadow formation on the surface of Zircaloy fuel channels near stainless steel control blades in BWRs by adapting a multi-element model analogous to an elec. circuit instead of the preliminary model in the previous paper. The other is that of the Halden reactor irradn. expts., in which the localized in-pile corrosion of Zircaloy fuel claddings near platinum was reported by Y. Etoh et al. (1997), by adapting the detailed irradn. data in the report. As a result, both cases are explained by two parallel mechanisms affected by the ".beta.-induced elec. fields" on and in zirconium oxide and high-purity water. One of the mechanisms is the formation of localized electrochem. cells which occur between the surface of zirconium **oxide** adjacent to bare and grounded **metals** such as stainless steel or platinum and its neighboring parts. The other is the retardation of oxygen ions in the zirconium oxide by the space charge effect, proposed by S. Nanikawa et al. (1998), according to the level of the induced elec. potential.
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 10 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:307728 HCAPLUS
DN 131:133621
TI Mineralogy, environment, and nickel processing. The international Kola project
AU Gregurek, Dean; Reimann, Clemens; Stumpfl, Eugen F.
CS Inst. Geowissenschaften, Abteilung Mineralogie Petrologie, Montanuniv., Leoben, A-8700, Austria
SO Berg- Huettenmaenn. Monatsh. (1999), 144(4), 146-151
CODEN: BHMMAM; ISSN: 0005-8912
PB Springer-Verlag Wien
DT Journal
LA German
AB The mineralogical compn. of snow filtrates and soil samples taken in the vicinity of Ni-Cu mines and smelters in the Kola region (Russia) were investigated within the context of an international project to det. the extent of the environmental impact of the Ni processing industry. Annual emissions which include 296,000 t of SO2 and significant amts. of metals have led to almost complete destruction of vegetation and severe damage to soils in the vicinity of individual **emitters**. Samples from 15 selected sites nearby mines and smelters were prepd. for microscopical and electron microprobe anal. Several minerals (sulfides, oxides, and silicates) and technogenic phases (Cu-Ni-Fe-Co sulfides globules and slags) were identified in the polished specimens. Based on their compn., they can be attributed to specific **emitters** and to certain metallurgical processes. It is discussed that the lack of mineralogical data can limit the significance of chem. analyses of heavy metal processing polluted areas for the hazard assessment of heavy metal mobility in the soil.

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 11 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:175543 HCAPLUS
DN 130:198785
TI Rare earth **emitter**
IN Sarraf, David B.
PA Thermal Corp., USA
SO U.S., 4 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5879473	A	19990309	US 1997-791375	19970130

AB The app. is a selective radiation **emitter** to be used in conjunction with a photocell for thermophotovoltaic generation of electricity from heat. One embodiment of the **emitter** is a layer of selectively radiating rare earth **oxide** bonded onto a heated base **metal** layer by the use of an intermediate thin layer of porous metal powder. Another embodiment is an **emitter** of a thick metal powder layer combined with a rare earth oxide which is formed into the voids in the metal powder structure and bonded to a metal substrate which is to be heated. In this embodiment the metal powder grains are gold plated to limit their emissivity, so that emission outside the desired band of the rare earth oxide is greatly reduced.

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 12 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:779690 HCAPLUS
DN 130:46219
TI Fabrication of compound semiconductor device and compound semiconductor device itself
IN Asano, Tetsuo
PA Sanyo Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10321642	A2	19981204	JP 1997-128548	19970519

AB The title method involves etching cap and **emitter** layers using a dummy **emitter** as a mask to remove the cap layer and a portion of the **emitter** layer, forming a side wall protective layer, etching the remaining **emitter** layer using the dummy **emitter** layer and side wall protective layer as a mask to form an **emitter** ledge, forming a resist film, etching back the resist film to expose the dummy **emitter** layer and side wall protective layer, wet etching the dummy **emitter** layer and side wall protective layer to expose the remaining cap layer, depositing a 1st **metal film** on the overall surfaces, and lifting off the resist film to selectively form an **emitter** electrode from the 1st **metal film** on the cap layer. Addnl., the method involves forming a collector electrode from a 2nd **metal film**.

Specifically, the 1st and 2nd **metal films** may comprise Pt/Ti/Pt/Au and AuGe/Ni, resp. By wet etching, damaging of other regions is prevented, and by lifting off, an isolated electrode is formed without ion milling. A compd. semiconductor device fabricated by the above method is also described.

L45 ANSWER 13 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:480696 HCAPLUS
DN 127:103113
TI Electron-emitting element and manufacture thereof
IN Gamo, Hidenonori; Kanamaru, Seigo; Ito, Junji
PA Toppan Printing Co., Ltd., Japan; Agency of Industrial Sciences and Technology
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09129123	A2	19970516	JP 1996-90337	19960319
	JP 3012517	B2	20000221		
PRAI	JP 1995-138750	A	19950511		
	JP 1995-240999	A	19950825		

AB In the electron-emitting element comprising a substrate, an **emitter** wiring layer, an insulating layer and a gate electrode laminated in order, a opening section arranged in the gate electrode and the insulating layer for reaching the **emitter** wiring layer, in the opening section, a cone-shaped **emitter** formed on the **emitter** wiring layer and without contact with the gate **emitter**, the **emitter** wiring layer is formed from a metal (e.g., Cr, Cr-Al **alloy**) thin **film**, and the **emitter** is formed from non-single cryst. Si. The element is esp. useful for field **emitter** array (FEA) in flat display device.

L45 ANSWER 14 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:475876 HCAPLUS
DN 127:89684
TI Magnetic devices and magnetic sensors using thereof
IN Mizushima, Koichi; Konno, Teruyuki; Inomata, Koichiro; Yamauchi, Hisashi
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09128719	A2	19970516	JP 1996-189366	19960718
	JP 3217703	B2	20011015		
PRAI	JP 1995-225625	A	19950901		

AB The title magnetic sensors have a three terminal device comprising an **emitter**, a base, and a collector, wherein the semiconductor collector layer and a magnetic laminated base film make a Schottky junction. The magnetic laminated base film has an nonmagnetic film bound between opposing magnetic films. The **metallic emitter film** and base **film** are connected each other via a tunneling insulator film. The sensors provide variation of current across the magnetic device by magnetization orientation of the magnetic film

changed by an external magnetic field direction. The devices gives high sensitivity by low c.d.

L45 ANSWER 15 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:134688 HCAPLUS
DN 126:151612
TI Integrated circuits and their manufacture
IN Nishihara, Shinji; Ikeda, Shuji; Ishida, Shinichi; Suzuki, Masayasu; Asayama, Masaichiro
PA Hitachi Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08330458	A2	19961213	JP 1995-136254	19950602

AB The circuit is composed of MISFETs and bipolar transistors on the main surface of a semiconductor substrate, and has an **emitter** electrode from a doped polycryst. Si-refractory metal silicide laminate on the **emitter** region, a 1st interlayer insulating film contg. a borophosphosilicate or phosphosilicate glass **film**, and wiring consisting of refractory **metal** and conductor **films**, connected to the **emitter** electrode and the source or the drain electrode of the MISFET through contact holes. A low-resistance refractory metal silicide is formed at the interface between the refractory metal silicide of the **emitter** electrode and the refractory **metal film** in annealing, hence consumption of Si produces more holes and activates the impurity in the polycryst. Si film; thus the impurity concn. in the **emitter** region is raised and current amplification of **emitter** grounding is improved without deep diffusion of the impurity in the source-drain region; the contact resistance of the source or the drain is lowered by formation of low-resistance refractory metal silicide, and characteristics of the **emitter** electrode are improved as recombination centers of holes in the polycryst. Si film disappear.

L45 ANSWER 16 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:237597 HCAPLUS
DN 124:275978
TI Memory and amplifier devices
IN Sakakima, Hiroshi; Irie, Yasusuke; Kawawake, Yasuhiro; Satomi, Mitsuo
PA Matsushita Electric Ind Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08018118	A2	19960119	JP 1994-149230	19940630

AB The memory device is constructed from (1) a laminate conductor which consists of a hard magnetic film (e.g., from Co-Pt) having a good squareness in hysteresis and large variation of magnetoresistance with minute change of magnetic field, a soft magnetic film (e.g., from NixCoyFez with x = 0.6-0.9, yr = 0.05-0.4, and z = 0-0.3 or x = 0-0.4, yr = 0.2-0.5, and z = 0-0.5) easy in magnetic inversion by a change in a weak magnetic field, and a nonmagnetic **metal film** (e.g.,

Cu, Ag, or Au) therebetween for lowering of magnetic bonding between the magnetic films and (2) a conductive lead located in the vicinity of the laminate conductor as sepd. from the laminate conductor by an insulating film, forming the magnetic films to an **emitter** and a collector, or vice versa, and the nonmagnetic film to the base, with placement of a voltage detector or a load on the side of the collector. The amplifier device has the same construction.

L45 ANSWER 17 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:231786 HCAPLUS
DN 124:304832
TI Electron-emitting device
IN Sano, Kenya; Kawakubo, Takashi
PA Tokyo Shibaura Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08031302	A2	19960202	JP 1994-165164	19940718

AB The device comprises an insulating film of an **oxide** of Ta-contg. amorphous **alloy** sandwiched between a pair of electrodes. Preferably, the amorphous alloy contains Ta and Al as main components. The device generates low diode current, and effectively emits electrons.

L45 ANSWER 18 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:532014 HCAPLUS
DN 122:280100
TI Inorganic **emitter** materials and discharge electrodes for lamps
IN Takegawa, Yoshinobu; Sakon, Shigetoshi; Imamura, Hiroshi
PA Matsushita Electric Works Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06223774	A2	19940812	JP 1993-9544	19930122

AB The electrodes are prepd. by depositing on **metal** wires successively with **metal oxides** and inorg. materials contg. **emitter** and reducing materials. The **emitter** materials may be alk. earth carbonates. The reducing material may be a Group IIIA, IVA, or VA metal. The **metal oxide** may be alumina.

L45 ANSWER 19 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:394725 HCAPLUS
DN 122:149563
TI Electrode in fluorescent lamps
IN Takegawa, Yoshinobu; Sakon, Shigetoshi; Yamada, Shuji
PA Matsushita Electric Works Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 06150881	A2	19940531	JP 1992-300164	19921110

AB In manuf. of fluorescent lamp electrode having aluminum **oxide** covered **metal** wire and **emitter** material coated on the aluminum oxide layer, the surface of the aluminum oxide layer is prepd. in whisker-like shape to ensure high adhesive intensity of the **emitter** material to the ion bombardment. The metal wire is made of Fe-Cr-Al alloy of compn. ranges: Cr 10 - 30 wt%, Al 1 - 10 wt% and Fe for the rest.

L45 ANSWER 20 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:591522 HCAPLUS
DN 121:191522
TI Electron emitting elements, light emitting elements, and image display devices
IN Kaneko, Tetsuya; Nomura, Ichiro; Suzuki, Hidetoshi; Nakamura, Naohito; Iwai, Hisami; Takeda, Toshihiko
PA Canon Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 20 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 06020590	A2	19940128	JP 1992-194564	19920630
	JP 3023734	B2	20000321		

AB An electron emitting-element consists of a thermal fusion bonded vacuum container, a metal electrode, and an electron emitting base; the surface of the electrode consists of an alloy of the electrode metal and the elec. cond. of the **alloy oxide** is greater than that of the **oxide** of the electrode **metal**. An image display device is manufd. from the electron emitting elements, which are arranged on an electron source, and a face plate, and a light emitting device is manufd. by placing a fluorescing element and a face plate on an array of electron emitting devices. The electrode metal is Ni and the surface is a Ni alloy contg. 5-20 mol.% Ag or Li, or Cr and the surface is a Cr alloy contg. 0.35-1.4 mol.% Ti or 1.25-5 mol.% Ni.

L45 ANSWER 21 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:259246 HCAPLUS
DN 120:259246
TI Impregnated cathodes for cathode-ray tubes and manufacture thereof
IN Taguchi, Tadanori; Suzuki, Yukio; Saito, Shunji
PA Hitachi Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05250981	A2	19930928	JP 1992-48709	19920305

AB The cathode consists of refractory metal sections from Mo and/or W, and electron **emitter** sections from compds. contg. at least Ba and O, and W, Sc, and O, and is prepd. by mixing of pellets from a powder of W and/or Mo, the compd. contg. Ba and O, and that contg. W, Sc, and O, pelletization of the mixt., debinderization of the pellets in a H2 atm.,

sintering of W and/or Mo and fixation of **emitters** thereon, and assembly with a barrier layer into a sleeve.

L45 ANSWER 22 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:122837 HCAPLUS
DN 120:122837
TI Electron **emitters** and manufacturing thereof
IN Yoshida, Yoshihiro; Kozuka, Takeshi; Kobayashi, Hiroshi
PA Ricoh Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 05198252	A2	19930806	JP 1992-7997	19920121

AB The title manufg. involves depositing a **metal film** on an elec. conductive layer, anodizing the **metal film** to form an insulator **film** having micropore through-holes, selectively etching the insulator film to give contact holes, and depositing electron emitting material in the contact holes. The arrangement gives easy application for large scale **emitters** in economical manufg.

L45 ANSWER 23 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:93158 HCAPLUS
DN 120:93158
TI Implant-free heterojunction bipolar transistor integrated circuit fabrication process
IN Prasad, Jayasimha S.; Park, Song W.; Vetanen, William A.; Beers, Irene G.; Haynes, Curtis M.
PA Tektronix, Inc., USA
SO U.S., 12 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 5268315	A	19931207	US 1992-940588	19920904
GB 2270418	A1	19940309	GB 1993-17381	19930820
DE 4329189	A1	19940310	DE 1993-4329189	19930830
JP 06232150	A2	19940819	JP 1993-244000	19930903
PRAI US 1992-940588		19920904		

AB The process can fabricate n-p-n heterojunction bipolar transistors, Schottky diodes, MIM capacitors, spiral inductors, and NiCr resistors. Two levels of interconnect metal are available. The first level **metal** is a conventional **dielec.**-insulated **metal** conductor. The second level metal includes an air-bridge for contacting the HBT **emitters**, which are on top of three level mesa structures. It is also an advanced low loss, low capacitance, air dielec. conductor useful for long interconnects and inductors. MIM capacitors are formed by sandwiching silicon nitride between the first layer metal and a capacitor top plate made with landed air-bridge metal. Precision thin film resistors are fabricated by depositing NiCr on silicon nitride. The three-level active mesa structure is etched down to the GaAs substrate, for lateral device isolation, with a truncated pyramidal shape which permits good step coverage of dielec. and metalization layers. The wet

etching process uses a compn. of H3PO4:H2O2:H2O in a preferred ratio of about 3:1:25 for the AlGaAs/GaAs system.

L45 ANSWER 24 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:683880 HCAPLUS
DN 119:283880
TI Noble-metal alloy composites for durable secondary electron **emitters**
AU Aitov, R. D.; Bondarenko, G. G.; Korzhavyi, A. P.
CS Moscow, Russia
SO Metally (1993), (4), 223-5
CODEN: MEALET
DT Journal
LA Russian
AB The use was studied of Pt, Pd, and Ag composites with oxides for secondary electron **emitters**. The effect was studied of the surface charge on the electron emission. The best sources are obtained using Li2O.

L45 ANSWER 25 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:639441 HCAPLUS
DN 119:239441
TI Manufacture of heterojunction bipolar transistors
IN Mitani, Katsuhiko; Masuda, Hiroshi; Mochizuki, Kazuhiro; Kusano, Chushiro
PA Hitachi Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05067628	A2	19930319	JP 1991-230042	19910910

AB Manuf. of a heterojunction bipolar transistor includes: (a) successively forming a 1st-cond. high-concn. subcollector layer, a 1st-cond. low-concn. collector layer, a 2nd-cond. high-concn. base layer, a 1st-cond. **emitter** layer with a greater bandgap than the base layer, and a 1st-cond. high-concn. subemitter layer; (b) deposition of a 1st **metal film** (e.g., WSi) and a 1st insulator film on the high-concn. subemitter layer; (c) removing the **metal film**, the 1st insulator **film**, the high-concn. subemitter-forming region to create an **emitter** mesa; (d) surrounding the **emitter** mesa with a 2nd insulator film formed up to the height of the 1st insulator film; (e) removing the 1st insulator film exposed in the 2nd insulator film to create an opening; (f) forming a 2nd **metal film** (e.g., W) with a wider top surface than the bottom surface on the 1st **metal film** exposed in the opening; (g) removing the 2nd insulator **film**; and (h) forming a 3rd **metal film** (e.g., AuZn base electrode) on the 2nd **metal film** and on the base layer around the **emitter** mesa. The heterojunction bipolar transistor has decreased external base resistance, and is capable of fast operation.

L45 ANSWER 26 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:615278 HCAPLUS
DN 119:215278
TI Contamination of liquid-metal indium ion **emitters**
AU Sieber, Anton; Fehringer, Michael; Ruedenauer, Friedrich G.; Steiger, Wolfgang
CS Hauptabte. Angew. Phys., Forschungszent. Seibersdorf, Switz.

SO Oesterr. Forschungszent. Seibersdorf, [Ber.] OEFZS (1993), OEFZS-4674, 23 pp.
CODEN: OFSODK; ISSN: 0253-5270
DT Report
LA German
AB Electron microprobe anal. of liq.-metal In ion **emitter** needles burning against a stainless steel collector showed that they are contaminated with high concns. of Fe and Cr with exception of the apex area, where the indium is clean. The contamination freeze in platelike structures under which In is flowing towards the apex. Due to breakage of the plates and reflow of In, the **metal film** on the needle is a multilayer film, in which In-rich layeres alternate with contamination-rich layers.

L45 ANSWER 27 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:263595 HCAPLUS
DN 118:263595
TI Alkali metal source for photomultiplier
IN Koike, Takashi; Inazuru, Tsutomu
PA Hamamatsu Photonics K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 04242040	A2	19920828	JP 1991-16067	19910114

AB The source, which is mounted on a lead placed along the inner wall of a photomultiplier, comprises a pair of metal hats, each of which encases a pellet contg. reactants which produce an alkali metal upon heating and a heater plate, wherein the pellets are placed on both sides of the heater, the hats are placed thereon and sealed off, the heating generates the metal vapor which leaks through a heating-created gap in the seal, and the vapor converts the precoat on the dynodes to the photoelectron **emitter**.

L45 ANSWER 28 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:244726 HCAPLUS
DN 118:244726
TI Electron **emitter** and image-display and imaging devices using the **emitter**
IN Takimoto, Kiyoshi; Matsuda, Hiroshi; Kawagishi, Hideyuki; Morikawa, Yuko
PA Canon K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 04286828	A2	19921012	JP 1991-74209	19910315
	JP 3185060	B2	20010709		

AB In an electron **emitter** having a structure of an insulator layer between a pair of electrodes, the insulator layer is formed on a smooth electrode having a surface roughness .ltoreq.1 nm, and the electrons are emitted from the surface opposite to the smooth electrode by applying an elec. potential between the electrodes. Specifically, the smooth electrode may comprise a noble metal on its **alloy**, and the

insulator **film** may comprise a Langmuir-Blodgett film. The elec.-field concn. is prevented and a uniform emission is obtained.

L45 ANSWER 29 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:85213 HCAPLUS
DN 118:85213
TI Corrosion-resistant iron alloy for **emitter** of far infrared
IN Ishii, Kazuhide; Kawasaki, Tatsuo
PA Kawasaki Steel Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 04173999	A2	19920622	JP 1990-295420	19901102

AB The **emitters** for far-IR radiation are manufd. from Fe alloy strip contg. Cr 6-30, Al 2-8, and Zr 0.2-1.5%, and are pretreated for oxide coating with the thickness .gtoreq.0.2 mg/cm2. The Fe-alloy strip is pretreated for >3 min at 900-1200.degree. in oxidizing atm. The **emitters** are useful for IR-heating app., esp. in heating of foods or drying of coatings.

L45 ANSWER 30 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1992:560481 HCAPLUS
DN 117:160481
TI Small-size fluorescent lamp
IN Tagawa, Koji; Uenari, Seiichi; Ikeuchi, Mitsuru; Onishi, Yasuo
PA Ushio Denki K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 04073853	A2	19920309	JP 1990-184167	19900713

AB The lamp has 2 electrode substrates, each of which are coated with a getter and a Hg compd. on 1 of the surfaces and the other, resp., joined at .ltoreq.30.degree. in opening angle, and an **emitter**-loaded metal mesh between the electrode substrates for a pair of opposing electrodes sealed with an inert gas at 80-130 torr and Hg in a glass tube .ltoreq.10 mm in inner diam., and is operated at .ltoreq.15 W in power consumption. The lamp has durability and suppression of blackening of the bulb due to scattering of the **emitter** material.

L45 ANSWER 31 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1992:265230 HCAPLUS
DN 116:265230
TI IR **emitters** with protected reflection layer and their preparation
IN Goebel, Wolfgang; Schmitz, Klaus; Wild, Wolfgang
PA Heraeus Quarzglas G.m.b.H., Germany
SO Ger. Offen., 3 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4021798	A1	19920206	DE 1990-4021798	19900709
	US 5276763	A	19940104	US 1992-949334	19920922
PRAI	DE 1990-4021798		19900709		
	US 1991-660489		19910225		

AB IR sources comprising a quartz glass or quartz-based material housing contg. a heating element and provided with a **metallic** reflection **film** on the backside of the housing are described in which a protective layer of ZrO2, SiO2, SnO2, or a mixt. of .gtoreq.2 of these oxides is provided on the reflective layer. Prepn. of the sources includes applying a layer of .gtoreq.1 thermally decomposable org. compd. of Zr, Sr, and/or Sn to the reflective layer and calcining at 600-950.degree..

L45 ANSWER 32 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1988:612889 HCAPLUS
DN 109:212889
TI An efficient and durable aluminum or aluminum alloy far-IR radiator
IN Ishida, Shinichi; Yamada, Kikuo
PA Nippon Aluminium Mfg. Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 63145797	A2	19880617	JP 1986-292121	19861208

AB The radiator comprises an anodic oxide film including far-IR emitting materials. Optionally, the far-IR emitting material may comprise C, or an oxide of Fe, Cr, Ni, Co, Ti, Sn, Ag, Pb, Au, Mg, Mn, Zn, etc. The radiator is useful as a heating component.

L45 ANSWER 33 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1983:604346 HCAPLUS
DN 99:204346
TI Corrosion phenomena in metal-encapsulated tin-plated transistors
AU Muecke, K. H.
CS Fachber. Elektrotech. Maschinenbau, Fachhochsch. Landshut, Landshut, D-8300, Fed. Rep. Ger.
SO Metalloberflaeche (1983), 37(10), 426-30
CODEN: MOFEAV; ISSN: 0026-0797
DT Journal
LA German
AB The corrosion in Ni encapsulated Sn-plated Si transistors was studied after > 10000 h operation at 40.degree.. Corrosion affects current-voltage properties. Corrosion occurs at the Au-plated base plate near the semiconductor, on the glass coating of the base plate, on the Al wires, and on the base and **emitter** region Al contacts. This corrosion is essentially due to electrodiffusion of ions on the glass and semiconductor and partly due to HCl or KCl etching, and anodization of the metal particles of the base plate. The corrosion is caused by H2O produced by reaction of H from the Sn plate and O2 trapped in the casing. It is prevented by using N2 instead of air during the processing.

L45 ANSWER 34 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1980:536556 HCAPLUS
DN 93:136556

TI Cermet
IN Clark, Grady Wayne; Holder, John Davis; Pasto, Arvid Eric
PA United States Dept. of Energy, USA
SO Ger. Offen., 20 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2947917	A1	19800604	DE 1979-2947917	19791128
	GB 2040908	A	19800903	GB 1979-32372	19790918
	GB 2040908	B2	19821027		
	JP 55076034	A2	19800607	JP 1979-154153	19791128
PRAI	US 1978-964406		19781128		

AB Directionally solidified cermets are obtained from a eutectic Mo-**metal oxide** by internal zone melting in a high-frequency elec. field. The induction heating parameters, elec. cond. of the cermet, and particle size are chosen to prevent melting of the external layers. The Mo content is 8-15 vo.%, and the balance is Cr2O3, LaCrO3, ZrO2-Al2O3, or ZrO2-CeO2. The cermets are useful for MHD electrodes, gas turbines, electron **emitters**, high-temp. valve seats, and cutting tools. The cermets are heated in the high-frequency field from room temp. to the eutectic melting temp. without radiative preheating. Thus, a mixt. of 150 g Cr2O3 -50/+80 mesh and 40 g Mo -100 mesh was hot pressed to 5 cm thick pellets in a Mo-lined graphite mold at 1550.degree. and 200 psig, and the pellets were heated in an induction field at 2.2 MHz from a 10 kW generator. The protective atm. was a CO-CO2 mixt. in a 10:1 vol. ratio. Output power of the generator was gradually increased to give a surface temp. of 1710.degree. (240.degree. below the eutectic temp.), and the pellets were moved through the inductor coil at 1 cm/h to obtain a directionally solidified Mo-Cr2O3 cermet.

L45 ANSWER 35 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1980:190171 HCAPLUS
DN 92:190171
TI Metal base for oxidic cathode
IN Ezawa, Masayoshi; Misumi, Akira; Shibata, Norio
PA Hitachi, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 2 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 54148138	A2	19791120	JP 1978-55585	19780512
	JP 61002748	B4	19860127		

AB The metal base used in the prepn. of oxide cathodes for electron tubes is obtained by heating a Ni base alloy contg. W and(or) Mo together with a min. amt. of a reducing metal (e.g. Zr) for 5-75 min at 80-150.degree. in a low-temp. O plasma, dissolving the W and(or) Mo oxide from the surface with an alkali and(or) H2O2 soln., and heating in vacuo (10-5-10-6 torr) for 5-60 min at 950-1100.degree. to form a dense surface structure. When an alkali-**metal oxide** which serves as an electron **emitter** is subsequently deposited, good adhesion takes place and spalling of the deposited electron-**emitter** layer does not occur readily.

L45 ANSWER 36 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1978:572615 HCAPLUS
DN 89:172615
TI Thermal radiation **emitter** material
IN Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; Iwai, Naoji
PA Tokyo Shibaura Electric Co., Ltd., Japan
SO Japan. Kokai, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 53066836	A2	19780614	JP 1976-141832	19761126
	JP 58017265	B4	19830406		
	DE 2656167	A1	19770623	DE 1976-2656167	19761210
PRAI	JP 1975-148912		19751212		
	JP 1975-155379		19751224		
	JP 1976-141832		19761126		

AB A thermal radiation **emitter** useful in transmitter and receiver tubes is obtained by oxidizing a Cr-contg. alloy layer deposited on a substrate by heating in an oxidizing atm. Thus, a 5-.mu. **film** of an Fe **alloy** cong. V 0.2 and Cr 18% was sputtered on a 0.5-mm Fe plate, and the alloy coating was oxidized in moist H2 (dew point 30.degree.) at 1200: for 1 h. The oxidized coating showed a thermal emissivity of 0.91%.

L45 ANSWER 37 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1977:494412 HCAPLUS
DN 87:94412
TI Material and method of making secondary-electron **emitters**
IN Henrich, Victor E.; Fan, John C. C.
PA Massachusetts Institute of Technology, USA
SO U.S., 6 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4038216	A	19770726	US 1975-604390	19750813
	US 4115228	A	19780919	US 1977-802203	19770531
PRAI	US 1974-482109		19740624		
	US 1975-604390		19750813		

AB Efficient secondary-electron **emitters** can be obtained by using radio-frequency sputtering to codeposit a high-yield insulator (e.g. MgO) and a metal (e.g. Au, Ag, Pt) in the form of thick, finely grained cermet films and then differentially sputtering the film surface. The metal is sputtered away faster than the ceramic to leave a ceramic-rich surface layer having excellent secondary-emission properties for low-energy incident electrons. The presence of metallic particles in the bulk of the films and the small size of the ceramic particles greatly reduce surface charging while allowing the **emitter** film to be thick enough to have a long operating life under adverse device conditions. The cermet film consists of 50-90 vol.% MgO. The av. sizes of the MgO and the metal particles are chosen to allow charge tunneling from the surface of the MgO grains to the surrounding metal grains to eliminate surface charging. The surface of the cermet film has a compn. of 70-100 vol.% MgO.

L45 ANSWER 38 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1975:446688 HCAPLUS
DN 83:46688
TI Rare earth **oxide-metal** eutectic composites
AU Stendera, J. W.; Benzel, J. F.
CS Sch. Ceram. Eng., Georgia Inst. Technol., Atlanta, Ga., USA
SO J. Am. Ceram. Soc. (1975), 58(3-4), 116-19
CODEN: JACTAW
DT Journal
LA English
AB Unidirectionally solidified composites of a rare earth sesquioxide + CeO2 + (Mo or W) and of CeO2 + (Mo or W) were grown using the direct-radio-frequency-coupling internal-molten-zone technique. The dramatic fiber improvement on addn. of CeO2 to the sesquioxide systems provides extra loosely bound O to increase the soly. of the **metal** in the molten **oxide**. The composites have extensive areas of ordered eutectic growth contg. 8-50 .times. 106 metal fibers/cm2; the fibers are 0.1-0.6.mu. diam. Fiber d. increased almost linearly as the growth rate was increased from 0.5 to .apprx.5.0 cm/hr. Slow growth favors the platelet metal morphology over the fiber morphology. Platelets are typically obsd. in areas where high impurity concns. are expected, e.g. at the top of the solidified zone and at grain boundaries. Selective etching of the metal fiber leaves a ceramic filter, and etching of the oxide exposes Mo pin tips for high-current d. field-effect electron **emitters**.

L45 ANSWER 39 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1974:542899 HCAPLUS
DN 81:142899
TI Complex electron-optical study of molybdenum-platinum alloy thermionic **emitters**
AU Shishkin, B. B.; Bakhtiyarov, R. S.
CS Mosk. Gos. Univ. im. Lomonosova, Moscow, USSR
SO Zh. Tekh. Fiz. (1974), 44(2), 387-99
CODEN: ZTEFA3
DT Journal
LA Russian
AB Studies of Mo-Pt thermionic **emitters** in emission and scanning electron microscopes and in an x-ray microanalyzer showed that the Pt forms a nonuniform **film** on the surface of the **alloy** which is not monat. and which leads to a nonuniform distribution of the work function over the surface. Equations were derived for the thermionic currents from **emitters** with nonuniform work functions and from those with complex conduction bands. Alloys of Mo with 1, 5, 10, and 15 wt. % Pt were studied.

L45 ANSWER 40 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1974:542897 HCAPLUS
DN 81:142897
TI Preparation and properties of sputtered magnesia-gold, magnesia-silver, and magnesia-nickel cermet films
AU Fan, John C. C.; Henrich, Victor E.
CS Lincoln Lab., Massachusetts Inst. Technol., Lexington, Mass., USA
SO J. Appl. Phys. (1974), 45(9), 3742-8
CODEN: JAPIAU
DT Journal
LA English
AB Finely grained films of 3 cermets-MgO/Au, MgO/Ag, and MgO/Ni-were grown by radio-frequency sputtering from composite targets. Electron-microscopic

studies show that MgO/Au and MgO/Ag films consist of small crystallites (usually <150 .ANG.) of both MgO and Au or Ag. In MgO/Ni films, it appears that amorphous Ni particles are embedded in a polycryst. MgO matrix. These cermet films are good secondary-electron **emitters**, especially in cases where differential-sputtering effects are large. In MgO/Au films, the Au particles sputter much faster than MgO resulting in a MgO-rich surface layer. In MgO/Ag films, the differential-sputtering effect is smaller, probably due to stronger interaction between MgO and Ag crystallites. In MgO/Ni, the Ni particles sputter slower than MgO resulting in a slightly Ni-rich surface (and hence in poorer electron-emission properties). The small particle sizes and the presence of metallic particles in the bulk of the films greatly reduce surface charging.

L45 ANSWER 41 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1974:430996 HCAPLUS
DN 81:30996
TI Optimized photocathode for mobility measurements in liquids
AU Martin, K.; Secker, P. E.
CS Sch. Electron. Eng. Sci., Univ. Coll. North Wales, Bangor/Caerns, Wales
SO J. Phys. E (1974), 7(6), 432-3
CODEN: JPSIAE
DT Journal
LA English
AB A description is given of the characteristics of a thin-film Au-Pd photosource arranged for back-illumination by uv photons. The **emitter** has a useful service life when operated in air or vapors of org. liqs. and exhibits a high photoelec. yield.

L45 ANSWER 42 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1974:407604 HCAPLUS
DN 81:7604
TI High performance **emitter** for thermoelectronic diode
IN Durand, Jean P.; Gillardeau, Jacques; Faron, Robert
PA Commissariat a l'Energie Atomique
SO Fr. Demande, 9 pp.
CODEN: FRXXBL
DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2186706	A1	19740111	FR 1972-19985	19720602
	FR 2186706	B1	19741227		
	US 3883765	A	19750513	US 1973-363867	19730525
	DE 2328066	A1	19731213	DE 1973-2328066	19730601
PRAI	FR 1972-19985		19720602		

AB A fissionable fuel, such as enriched U oxide, is encased in an **emitter** layer of at least 1 refractory metal. A preferred case, epitaxial and free of pores, obtained at .gtoreq.1200.degree. by the interaction of H at <1 mm pressure and the metal halogenide, preferably the hexafluoride, comprises a layer of Mo, followed by Mo-W, W, and a thin W surface layer oriented in the (110) plane. Deposition of the latter, the densest, most stable, and most suitable material for thermoelectronic emission, is enhanced by a temp. above 1500.degree. and the addn. of Cl or O to the gas mixt. Design details for improved mech. strength are described.

L45 ANSWER 43 OF 44 HCAPLUS COPYRIGHT 2002 ACS

AN 1973:459191 HCAPLUS
DN 79:59191
TI Monolithic bipolar semiconductor device employing a cermet for both Schottky barrier and ohmic contact
IN Breuer, David R.; Buie, James L.
PA TRW Inc.
SO U.S., 5 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3737742	A	19730605	US 1971-185137	19710930

AB A cermet material is used in an integrated bipolar-transistor circuit to serve the following 4 functions simultaneously: (1) to contact n+ **emitter** and p+ base regions, (2) to form a Schottky barrier with a lightly doped n collector region, (3) to provide a barrier against interaction of Si with contact **metal**, and (4) to make thin-**film** resistors. The cermet film is deposited in a single flash-evapn. step to provide all 4 functions. It consists, e.g., of Cr 58 and SiO 42 wt. %, is 300 .ANG. thick, and has a sp. resistivity of 3 .times. 10-3 .OMEGA.-cm. The layer may be composed of Cr 50-65 with SiO 35-50 wt. % or Cr 40-60 with Si 40-60 wt. %. The Schottky barrier diode is in shunt with the base-collector junction, the base serving as the diode anode and the collector as the cathode, improving the high-speed performance of the transistor. A layer of contact metal over the cermet coating forms a common contact to the collector and base regions and sep. contacts to the **emitter** region and collector contact area. The circuit element is a digital correlator.

L45 ANSWER 44 OF 44 HCAPLUS COPYRIGHT 2002 ACS
AN 1973:77286 HCAPLUS
DN 78:77286
TI Chromium electrodes for magnetohydrodynamic generators
IN Goolsby, Patrick F.
PA Reynolds Metals Co.
SO U.S., 4 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3710152	A	19730109	US 1970-50334	19700626
CA 967028	A1	19750506	CA 1971-116743	19710625
GB 1358561	A	19740703	GB 1971-30222	19710628
PRAI US 1970-50334		19700626		

AB Cr-based electrodes which are good thermionic **emitters** at elevated temps. are made. A Cr sample was fabricated to a typical MHD electrode configuration and exposed to temps. up to 1600.degree. in Ar for .apprx.15 hr. The wt. loss expected from vaporization did not occur. The surface was coated with a thin layer of chromic oxide, which suppressed the vapor pressure of the metal. Thus, Cr could be an ideal base electrode material. The choice of dopant materials is limited to oxides. Oxides suitable for increasing the abrasive resistance of the Cr and decreasing the thermionic work function include BaO, CaO, CeO2, HfO2, La2O3, NiO, SrO, ThO2, TiO2, and ZrO2 and their mixts. The metallic compn. was formed by thoroughly mixing powd. Cr with a **metal**

oxide at 0.5-25 wt. % of the mixt. The **metal** **oxide** had thermionic emissivity and was capable of lowering the total thermionic work function of the metallic compn. relative to Cr in a carrier liq. having .apprx.3 wt. % of a surface wetter. A dried powder was formed by vacuum drying. The dried powder was pressed into buttons having the configuration of a MHD electrode at .apprx.40,000 psi and then sintered. These buttons can be used as cathodes in a MHD generator without long-term elec. degrdn., sublimative or ablative erosion, or attack by basic slags.